AMERICAN GAS ASSOCIATION MONTHLY

Vol. V No. 3

MARCH, 1923

IF it's done with Heat—you can do it better with Gas.

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American Gas Association Monthly

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Our Greatest Problem

The biggest problem before our industry at the present day is that of reducing the loss of human life directly or indirectly chargeable to the use, manufacture or distribution of our product.

It is a most regrettable fact, but nevertheless one that must be faced squarely, that this potential danger to human life exists in almost every industrial manufacturing plant—that this potential danger lies concealed in many widely used products from these plants. No matter how inherently safe the product itself may be the very fact that its use is placed, necessarily more or less promiscuously, in the hands of all manners of people, introduces this element of potential danger.

Examples stare us in the face at every turn. The automobile, a machine in itself harmless, safe through years of painstaking effort, still exacts a heavy death toll every year. The railroads on which every known device for the protection of human life has been installed, still have this same problem to face.

And so has the gas industry.

And ours is a problem which presents many sides—sides which lead us to make our first statement that the problem of reducing the loss of human life is the greatest one before us at the present time.

We believe and know that gas, as manufactured today, is safe. Years of continuous effort have made it so. We believe and know that gas when used properly, in proper appliances—things we have striven for year in and year out—is safe. We believe and know that deaths directly attributable to our product are, numerically, few.

Why then, you ask, is this thing our biggest problem?

First, from the purely humanitarian aspect. It is essential to reduce these fatalities no matter how few, to the very minimum. Second, because our industry is monopolistic by economic necessity, because it is a public utility, these comparatively few fatalities become magnified in the public's mind until they assume proportions wholly out of scale with the numerical facts. Still they do.

Therefore, we say that this is our greatest problem and no means should be neglected to make gas and its use the safest utility offered the public.

AMERICAN
GAS ASSOCIATION
MONTHLY

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Utility and Public Obligations—Their Enforced Fulfillment

LOVICK P. MILES, Counsel, Memphis Power & Light Co., Memphis Street Railway Co.

IN a somewhat recent decision, the Maryland Public Service Commission emphasized the public necessity for sustained and efficient utility service. That very able and courageous body of men recognized in the war period, as did our own Railroad and Public Utilities Commission of Tennessee, the importance, from the standpoint of the public, of granting increased rates following the enormous and never-to-have-been-anticipated rise in the cost of labor and manufacturing materials, so that the companies might be saved from bankruptcy, not for the sake of their stockholders, but in order that they might be continued in a condition which would protect the public against any interruption of adequate and essential services.

Emphasized Value of the Services

The Maryland Commission pointed out that the street railway, water, gas, electricity and the telephone had become among the most important adjuncts to life in all thickly populated communities, and that without them business would come almost to a standstill and social life in our cities and suburban communities would be most radically changed; that so dependent had the people of our cities and towns become upon the utilities furnishing these commodities that an interruption of only an hour or so in the service was almost instantly felt throughout the length and breadth of the community, and continuous bad or inadequate service was a thing which no community could long tolerate.

Average Citizen Shows No Concern

We are prone to accept as a matter of fact, and without reflection upon their essentiality to our well-being, things to which we become daily accustomed. It is probably true that rarely does a street car rider, a consumer of water, a consumer of gas or electricity, or a user of

the telephone, pause to reflect upon the personal inconvenience, the community misfortune, the tremendous business loss which would follow a suspension of any one of these services. Therefore, it is not surprising that the average citizen is not alive to his personal and his selfish interests, and the like interests of his city or town in having maintained at all times an excellent service from the utilities upon which his community must depend for what the Maryland Commission has classified as "prime necessities of life."

In addition to the continued enjoyment of these necessities by those who are now being served with them, we should, as members of the several communities, and of the state, remember that without prompt provision in any community for these services for all others who in the community may want them, community growth in population, commerce, industry, home comfort and convenience cannot be expected, because so universally inviting are the natural resources and climatic conditions of our country, and so generally and promptly are utility services available for the newcomers, that men and women are under no compulsion to go, and they will not go, where such services do not await their coming and their demands.

Utilities Should Command Capital

So it follows, that it is not only in the public interest to have the maintenance of adequate utility service for those who now enjoy it, but also that the utilities should be, at all times, in position to command capital to promptly furnish additional service to those others who may come and require it in their homes, their stores, their factories and other places of business.

The last statement involves the fact that no public utility is ever through growing until the community, or the state which it serves, is at the end of its growth. Just so long as the community or the state increases in population, so long as its volume of commerce, its agricultural and manufactured products increase, just so long must the utility have ability to command the necessary investment to install the facilities with which to furnish additional volumes of what the Maryland Commission has classified as "prime necessities of life."

Mutual Obligations of Solemn Nature

You doubtless have grasped the idea which I shall express in my next announcement: that is, that there are certain mutual and very solemn obligations imposed upon both the public which must be served by the utility and upon the utilities which assume the very great responsibility of furnishing these essentials of modern life. While all investors are prompted in making their investments by a desire for gain, I have always felt that the investor in a public utility, and especially one in a utility which enjoys a monopoly in providing a service, should be peculiarly conscious of his responsibility, which partakes, to my mind, largely of the responsibility of a trustee charged with an obligation to see that all who require the service shall be served adequately, absolutely without discrimination, and at the lowest possible cost consistent with the continued maintenance of satisfactory service, and a sustained ability to meet additional demands for service as they arise.

Utility Must See Plant Is Efficient

There is a very solemn obligation upon the part of the utility to see to it that the facilities in which money shall be in-

vested, and upon which the public shall pay a reasonable return, are intelligently designed or selected so that the maximum plant efficiency may be obtained, and, so far as the plant itself is involved, the utility will be able to furnish the best that modern device has developed at the lowest fair cost. In obtaining money and incurring expenses incident to the acquisition of franchises and the installation of what I shall term plant investment, the most rigid economy and absolute honesty should be practiced, because, otherwise, the public will be burdened indefinitely with an unjust expense, because of the unwisdom, the extravagance or dishonesty of those who have sought and been given the opportunity to serve the community.

Officials Must Protect Public

Following the installation of its plant, the obligation of the utility to put and continue in charge of its operations men of the highest efficiency and absolute integrity is imperative, because efficiency and honesty in the supervision and operation of utility plants will give the public the maximum service from the plants at the lowest fair operating cost, prolong as far as practicable the life of the several units, and will protect the public against discrimination and against sharp, vicious and contemptible practices in the purchase of supplies and in accounting.

If I have correctly outlined the obligations of utilities to the public, among which are those of making, from time to time, sufficient investments to furnish adequate service, and to meet all legitimate expenses necessary to the current rendition of service, then the reciprocal obligation of the public is plain.

Believe Utilities Are Like Houdini

There is a popular and thoughtless idea in the minds, I believe, of the great majority of the public that utilities, through some magic, have the ability to command capital without limit, and that when failure of service is charged by them to financial difficulties, the impression frequently prevails that the failure is not due at all to financial difficulties, but solely to the perversity of the utility and its wilful refusal to use money which it can readily command.

Very few people pause and reflect that a utility is in the same class with an individual when it seeks the loan of money; that it has a limit to its credit, and that its ability to borrow is conditioned upon its collateral and its ability to pay. Nevertheless, such is the case, and the Knoxville Railway & Light Company, the Nashville Railway & Light Company, the Memphis Street Railway Company, and the Memphis Gas & Electric Company, with whose affairs I have been recently somewhat familiar, and, therefore, in a position to speak, stand in no different attitude with a bank from that which a plantation negro occupies when it comes to borrow money. It must give what the lender considers a good mortgage on everything it has, and everything it expects to have, just as the negro must mortgage his mules and his crop.

Cannot Compel Public to Invest

In this connection the Maryland Commission, in the case to which I have referred, said: "There is no statutory law which can be resorted to in order to compel the investing public to invest its money in a public utility rather than in any other class of enterprise, and the only laws which can be appealed to are the natural laws of trade and commerce which lead men to invest their money where it may reasonably be expected to

yield them a fair return for its use, and forbid the investment of money where there is no reasonable hope or expectation of such a return."

Obligation Arises in Public Necessity

It follows, then, that the reciprocal obligation of the public is to give the utilities the right to operate for such length of time, and upon such terms and conditions, and to at all times, charge such rates as will, regardless of the fluctuations in the cost of rendering service, enable them to command promptly the investment of money necessary for initially installing their plants, for promptly making required extensions, for the prompt replacement of equipment becoming obsolete, due to progress in the arts, or to inadequacy, so as to insure the public enjoyment at all times of the best available; for continuing the maintenance of their properties in efficient condition, and for rendering such character of service at all times as the needs of the community reasonably require. Bear in mind that the discharge of this obligation is of first importance to the public; indeed, it arises from public necessity rather than from any utility requirement, because unless the obligation outlined is discharged, the services so essential to communities cannot, and will not, be provided.

Public Will not Accord Fair Deal

Having stated generally the mutual obligations of the utilities and the public, the question arises, how shall their discharge be best insured? Experience has taught that at least many utilities unregulated and uncontrolled cannot be trusted to make promptly the necessary investments, nor can they be trusted to, at all times, maintain their properties in first-class condition, nor can they be trusted to furnish adequate service at fair rates, nor can they be trusted to serve without discrimination. Upon the other hand, it has been demonstrated that the public, if unrestrained, will not accord utilities fair treatment, but will selfishly demand, and, so long as possible, extort service at less than its fair cost, and frequently experience no compunctions of conscience while confiscating the property of those whom the public has invited to invest their money, and to serve. These facts long ago prompted efforts to supervise, regulate and protect the utility business.

In early days the public, seeking service at the lowest cost, very generally invited competition, with the results that investments were frequently duplicated, and in the long run, if competition continued, one or more of the corporations became bankrupt and, almost invariably, following bankruptcy or agreements, consolidations followed, which in turn brought about higher rates than possibly could have been justified had a monoply been granted originally under strict regulation.

Shows Unfairness of Some Regulation

Regulation of the utilities in some instances was formerly attempted through direct or special acts of legislatures, but in such cases either the utilities or partisans in antagonistic localities were able to control the local delegations which stood for the regulatory bills, and in every instance, it may be safely asserted, the regulation attempted by the special acts was without proper investigation and, as one writer puts it, "therefore, arbitrary, unscientific and often unfair."

Furthermore, the usual biennial sessions of legislatures made it impossible

to promptly remedy a situation which had been created by special act and proven undesirable from the standpoint of the public, or of the utility, or of both.

Explains Recent Franchise Pacts

Until comparatively recently in our history, the operation of utilities was controlled principally by franchise contracts entered into with municipalities for long terms of years, in which standards of service and rates were generally fixed for the terms of the contracts, regardless of developments which might make the prescribed standards undesirable and the rates either unfair to the public or impossible from the standpoint of the utility and the public, viewed in the light of financial requirements necessary to induce capital investments, and to pay operating expenses.

Points Out the Inconsistencies

Illustrative of this, I have in mind now a contract entered into many years ago when gas was generally used as an illuminant, wherein a candle-power requirement was imposed upon the company. As you well know, electricity has generally supplanted gas as an illuminant, whereas the latter is now used in vast volumes for heating. A heating standard for gas is now of prime importance, whereas a candle-power standard is of little or no concern. Nevertheless, under the contract referred to, the company may furnish a gas of the prescribed candle-power requirement at the contract price, but of a heating value bad from the consumer's standpoint, and out of line with the standards prescribed by modern commissions, and yet, so long as the company finds it to its interest to observe the contract requirement, the city, in the absence of legislative act, is powerless to secure any relief.

I have in mind, also, a number of contracts wherein the rates were prescribed prior to the late war, with many of which you are familiar.

The Public Was Real Sufferer

In these cases the costs of labor and materials used in operations, the cost of new capital, and the amount of taxes demanded of the companies increased during the war period from one hundred to as much, in some instances, as five hundred per cent. Notwithstanding these increases and notwithstanding the producer and seller of all other commodities were conceded by common consent the right to increase their prices in accord with the increase in the cost of the article to them, and notwithstanding the most urgent appeal of the companies and the most conclusive showing of the injustice of maintaining the contract rates, and of the certainty of receiverships, probable bankruptcy and the inability of the companies to further finance extensions and to provide adequate service, the cities practically, with one accord, refused to voluntarily concede any change. The vast loss to investors, the impairment of service, the public inconvenience and economic damage which resulted from the consequent wrecking of utility companies by such course of conduct was staggering, and the public, after all, was the greatest sufferer from the municipal failure to do the manifestly right thing.

There is no more reason why the price of gas or electricity, or telephone service, or a street railway fare should be fixed for tweny-five or fifty years than there is for the price of corn, cotton, hogs, or any other commodity being fixed by law

for a like period. A price fair to-day for any one of these commodities may be unfair to either the public or the producer one year from now. The prices for utility services should be based at all times primarily upon the current cost of the product to be sold, and secondarily, upon the attitude of the investing public toward lending money for enlargements of utility properties.

Cowardice Often Hurts the Public

But, while any city government will readily accept a reduction in rates from a utility, rarely will one have the courage, in the face of local opposition and prejudice, to concede a just increase, and unfortunately for the public, this cowardice generally results injuriously to those it is intended to benefit. In dealing with these problems, the municipalities can rarely act justly, because they represent themselves and approach the propositions as partisans. Furthermore, they are generally under fire from newspapers which seek circulation through abuse of corporations instead of the legitimate expenditure of money for news, and they are generally under further fire from opposing politicians who seek to discredit the existing administrations in the hope that they will be supplanted by partisans of their own.

Shows Evils of Some "Control"

But, it is just to say, that municipal governments have not always acted favorably to the public, or in response to popular clamor. It is fair, and it is true to remark, that in many instances utility companies, by flattery, by contributing to campaign funds, by bringing big local influences to bear, and doubtless, in some cases, through corruption, have obtained concessions which have been unjust to the public. Results unfair to the utility or to the public are more likely to occur when the municipal governments, having jurisdiction over these matters, are in the hands of ignorant men, politicians, or others with no special equipment for handling utility problems, sometimes with no sense of responsibility, and never selected with any view to their equipment to deliberately and judicially consider and dispose of such problems.

How Commission Rule Originated

Recognizing the undesirability of unrestrained utility, or unrestrained public control of utility investments, service and affairs, and realizing the unsatisfactory results from direct legislative acts, the abuses, the injustices and the crude efforts of municipal governments in dealing with these vast public interests, control of the utilities through State Commissions was finally conceived, and that control has been generally adopted throughout the United States, forty-five out of forty-eight states having adopted it in one form or another. With one exception, this control, when once made effective, has never been abolished and the establishment of a great central state tribunal, with jurisdiction over the utilities, is now generally conceded to be the best means so far developed to compel the utilities and the public to discharge their mutual obligations, to which I have referred earlier in this address.

Increase Alone Hit Popularity

In passing, I may say that not until the war brought about conditions which impelled fair and courageous commissioners, in the interest of the public, to increase rates, when, as a member of the Missouri Public Service Commission said, the public to its amazement dis-

covered that their commissions not only had the right to decrease rates, the exercise of which had theretofore been exceedingly popular, but also the right to increase them when facts made increases just, did these commissions become popular with the utilities and unpopular with the public. Theretofore, they had been generally resorted to, in many cases, with success, for the purpose of having contracts abrogated, contract rates reduced, and new standards of service adopted at the instance of the public, and over the protest of the utilities. And, I believe, history will bear me out in the assertion that, with rare, exceptions, the enactment of laws creating these commissions has been opposed, postponed and defeated by utility companies. The war aroused them to the justice of the scheme, and they found, when composed of men of courage, intelligence and integrity, the commissions safeguarded best the interests of the public and the interests of the companies, which interests, when you analyze them impartially, are not antagonistic.

Pictures Duties of the Tribunal

This method of utility supervision and control contemplates, as I have stated, the establishment of an important and independent tribunal which shall concentrate its study and specialize upon utility problems; a tribunal that shall be as far removed as practicable from community or corporate partisan influences; a tribunal that shall be aided by expert engineers and accountants who are educated in the science of and experienced in the actual financing, construction and operation of utility properties, and familiar with the varying volumes and standards of service required by the public. This system contemplates commissions of ability, dignity and a deeply conscientious sense of responsibility, which will deliberately and judicially act and, as a rule, so chosen that at all times there will be upon such boards, as in Tennessee, at least one member with from four to six years' experience as a commissioner, and at least one other with not less than two years of like experience.

Are Intended as Valuable Courts

These commissions are intended to be great branches of the state governments, and as a further restraint upon and protection against any careless or improper treatment of the public or the utility, their decisions, as in Tennessee, are subject to judicial review by the highest courts. This conception of these utilities has been voiced by supreme courts generally, and I think the following expressions from among the many in recent decisions where their nature and functions have been recognized and defined by courts of last resort, may be interesting and impressive.

The Supreme Court of Illinois, in State Public Utilities Commission ex rel. vs. Springfield Gas & Electric Company, 125 N. E., 891, said:

Is "An Office of Great Dignity"

"It is clear from the salary fixed for the commissioners, and the great power vested in the commission by the Public Utilities Act, that the Legislature intended to create an office of dignity and great responsibility. It is, therefore, not to be expected that through fear or popular disfavor, the commission will coyly toy with the situation. It sits to administer justice to individual and corporation, the weak, the strong, the poor, the wealthy, indifferently, fearing none and fawning on none."

In New York, in People vs. McCall,

113 N. E., 795, the Court used this language:

"The public service commissions were created by the legislature to perform very important functions in the community, namely, to regulate the great public service corporations of the State in the conduct of their business and compel those corporations adequately to discharge their duties to the public, and not to exact, therefore, excessive charges. It was assumed, perhaps, by the legislature that the members of the public service commissions would acquire special knowledge of the matters entrusted to them by experience and study, and that when the plan of their creation was fully developed, they would prove efficient instrumentalities for dealing with the complex problems presented by the activities of these great corporations."

Wisconsin View of Commission

The Supreme Court of Wisconsin, in Railway Company vs. Railroad Commission, 116 N. W., 905, gave this view of such commissions:

"The commission has the charge and determination of interests vast in amount, delicate and complicated in their legal and economic relations, affecting the happiness and prosperity of all the people of the state, and involving the consideration and protection of private rights of the most sacred character. Experience tends to show that public officers, as well as private citizens, are apt to rise in character and dignity to meet great responsibilities, but to shift responsibility where opportunity of shifting is easily afforded, and thereby to deteriorate in efficiency and in character. Besides this, the work of the commission requires much expert knowledge of the difficult subject of transportation and rates, the consideration and application of economic as well as legal principles, and an intimacy with local and state traffic conditions."

A very profound student, and a very excellent governor, who had the intelligence and industry to reach correct conclusions, and the courage to announce and advocate them, who, during his four years as governor, and ever since as a private citizen, has rendered the very great state of Arkansas most signal service, thus summarized the merits of state commission control of public utilities. Governor Brough said:

"The principle of regulation of utilities by a state central agency is progressive legislation, having been adopted either by constitution or by statute in forty-five of the forty-eight states of the Union.

Trained Minds a Requirement

"The commission law provides for a state agency equipped with trained minds and expert advice, through which the police power of the state can be exercised in an enlightened and legal manner, guaranteeing to the citizen service, to the investor justice, and to the state advancement.

"The act requires the securing of a certificate of convenience and necessity before any public service utility can engage in the public service business in this state. This prevents speculating and gambling for financial gain in the right of the public to secure service from a utility. It also protects the legitimate utility operator and his investment and enables him to give service. Such a provision was enacted into the Federal Act to regulate commerce by the Transportation Act of February, 1920, by the Congress.

"A state agency is charged with the duty of supervising and approving the issuance of all public utility securities. This prevents the reprehensible practice engaged in in former years of inflating the indebtedness and obligation of public utilities. This prevents the watering of stocks and bonds and denies to the financial pirates the privilege of exploiting utility service and the public and prohibits the placing of worthless and fraudulent securities into the hands of innocent purchasers. Such a provision

as this was also written into the Act to Regulate Commerce by the Federal Congress of 1920. Surely, the people have a right to expect the state to protect them to this extent.

Supplies Real Technical View

"The commission law provides for a tribunal of deliberative, unprejudiced minds, surounds them with technical advice, authoritative publications and places them in a position to inform themselves thoroughly, analyze and weigh all public service questions, thus fitting them to act intelligently for the interest of the state as a whole. From the decisions of such a commission there follows, as a matter of right, an appeal.

"The commission law does away with the long-term franchises, so often declared by courts contrary to public interest and welfare, and provides that the rates of the utility shall at all times be subject to change, as circumstances and conditions warrant and justify.

Courts Guarantee a "Fair Value"

"The commission law provides for a valuation of the property of the utility. By this means only can fair value be determined. The courts of the land are unanimous upon the point that the rate of the utility must be based upon fair value. Only by the application of this principle can we hope to see investments made in the public utilities of the state.

"It is recognized in economics that in the utility field *regulated* monoply is better for the public than unregulated competition. Competition means waste, duplication of equipment and doubling of the cost of operation.

"The commission law represents the best thought of legal minds and of engineering ability of the nation as the proper method of handling public utilities. The law is builded upon the foundations of reason and justice, and only by the application of such principles can the state keep step with progress and prosperity.

Mean a Small Settlement, Too

"The commission law provides for a sane, sensible treatment of a matter of vital concern to the comfort, safety, health and life of practically every citizen of the state. It removes the utility and the service that it is supposed to render from the confusion and complexity of hundreds of municipal authorities attempting to handle the subject for which they are not equipped, upon which many are little informed and very great numbers quite frequently intentionally, ill-advised. It lifts the question from the muck and mire of partisan politics and places it where it cannot be made, the prey and puppet of 'ward politicians,' whose exactions are quite often special consideration and special favors to a few to the detriment of the public welfare as a whole."

These commissions are always open for the filing and hearing of petitions, and equipped for the prompt consideration and decision of issues raised, so that in any emergency which confronts either the public or the utility, prompt relief may be obtained.

After all I have said, it is not surprising that the conclusion heretofore referred to, that state board control of utilities is the surest means, so far devised, for compelling utilities and the public to meet their respective obligations, is now generally entertained.

Dissatisfaction Can Be Ended!

I have endeavored to point out the respective obligations of utilities and of the public, and the best means so far devised for their enforced fulfillment. A constant recognition of these obligations by those subject to them, and a sustained sense of the dignity and vast responsibility of utility commissions by their members, will pretty nearly end public dissatisfaction with utility service and utility complaint of public treatment accorded these essential public servants.

Mr. A. I. Phillips Resigns from the Association's Staff

THE Association announces with regret the resignation from its staff of Alfred I. Phillips.

Mr. Phillips is a graduate of the Massachusetts Institute of Technology, and after graduation he was connected for a number of years with the operating department of the United Gas Improvement Company. He was toluol expert in the army ordnance department during the war. Subsequently, he became associate gas engineer of the National Bureau of Standards, where he did considerable work as a member of the Indiana Gas Standards committee and as an investigator of service difficulties for several public service commissions.

After joining the Association's staff as service engineer, Mr. Phillips maintained the contact with state public service commissions which he had established at the Bureau of Standards. In this capacity he was called upon to testify for associations or public bodies before commissions on a number of occasions.

On February first, Mr. Phillips became associated with Arthur D. Little, Inc., of Cambridge, Mass., a firm well known as consulting chemists and chemical engineers. When Mr. Phillips takes up his new duties as gas engineer, Arthur D. Little, Inc., will enter the field of gas engineering as consulting engineers, specializing in the development and improvement of processes, in assisting gas companies to improve efficiencies and obtain economies in operation, and in handling investigations as to rates or service for commissions, companies or municipalities where a fair and unbiased report and opinion is desired.

Mr. A. Gordon King Joins Association's Staff

THE Association announces that on February 1st, Mr. A. Gordon King joined its staff as service engineer.

Mr. King, prior to assuming his present duties, was gas engineer of the Engineering Bureau of the Pennsylvania Public Service Commission. Born in England in 1885, he received his education there and trained for the gas industry at the Gravesend Technical Institute and the Regent Street (London) Polytechnic Institute. He holds the full technological certificate, first class honors grade, of the City and Guilds of London Institute in gas manufacture and allied subjects and the Regent Street Polytechnic honors grade certificate and prize in gas manufacture.

Coming to the United States in 1907, he became connected with the gas industry here where he acquired further experience not only in the manufacture but the distribution and utilization end of the industry. He served in the chemical warfare service during the world war and shortly after its conclusion became connected with the Public Service Commission of New York, (2nd District) as gas engineer.

Mr. King will assume the duties of service engineer, handling all questions relative to rates, standards and gas manufacture which come within the province of the Association's work.

GENERAL

CHAIRMEN OF GENERAL COMMITTEES ORGANIZED TO DATE

Accident Prevention—F. W. Fisher, Rochester, N. Y.

Amendments to Constitution—Wm. J. Clark, Mt. Vernon, N. Y.

American Engineering Standards Committee, Representative on—A. H. Hall, New York, N. Y.—(Alternate Representative) W. J. Serrill, Philadelphia, Pa.

Representatives on Sectional Committees—Underground Construction—National Electrical Safety Code—C. C. Simpson, New York, N. Y. Illumination, Nomenclature and Photometric Standards— W. J. Serrill, Philadelphia, Pa. Ventilating Code—Geo. E. Bennett, New York, N. Y. Safety Code Correlating Committee—W. R. Addicks, New York, N. Y.—(Alternate Representative) Donald McDonald, New York, N. Y.

Award of Beal Medal—R. B. Brown, Milwaukee, Wis.

Chamber of Commerce—D. D. Barnum, Boston, Mass.

Cooperation with Educational Institutions—C. N. Chubb, Davenport, Ia.

Finance—James Lawrence, New York, N. Y.

Gas Safety Code—W. R. Addicks, New York, N. Y.

Gas Standards—J. B. Klumpp, Philadelphia, Pa.

Geographic Sections—L. R. Dutton, Jenkintown, Pa.

National Fire Protection Association—R. S. Doull, New York, N. Y.

Nominating—C. M. Cohn, Baltimore, Md.

Rate Fundamentals—R. A. Carter, New York, N. Y.

Rate Structure—T. V. Purcell, Chicago, Ill.

Standard Gas Appliance Specifications—W. T. Rason, New York, N. Y.

United States National Committee of International Commission on Illumination, Representative on—Howard Lyon, Gloucester, N. J.

Government by Principle

FRANCIS W. GOODENOUGH, Executive Chairman, The British Commercial Gas Assn.

I SAW the question set the other day to students in Business Science: "Which is the more important, Principle or Policy?"; and the very sound answer given was that, as Principle was cause and Policy result—Principle the soil, Policy the produce—there could be no doubt as to their relative importance. That question and answer led me to adopt the title I have taken to-day for my remarks.

The most important thing for every life is, that it should be governed by principle, whether it be the life of an individual, of a business, or of a nation.

The great weakness of our public life to-day is that expediency has been exalted above principle in the factors determining policy.

It is as important that principle should govern the conduct of business—and business men—as that it should be supreme in the conduct of national affairs.

By principle, it will be understood that I mean good principle—the principle of good, of right. There is in truth no evil principle, only the absence or lesser degree of good—as there is no such thing as darkness, only the absence or lesser degree of light.

Difference between Principle and Policy

The fundamental distinction between principle and policy is, that the one is immutable, the other variable. There is no element of mutability in principle. Truth, honesty, justice, mercy, patience, kindliness, unselfishness, humility are absolute and universal. There is "no shadow of turning" in them. With them, there never was a beginning and never can be an ending. They are what they are—and they are available always, everywhere, for everybody. There is no limit to the supply. The power of principle is inexhaustible; it is infinite.

Policy is the expression of principle by individuals manifested in actions, and therefore varies with the individual's understanding of principle and his fidelity to it.

There is no individuality in principle, no changeability. The only change in relation to principle is growth in our understanding of it, which will be reflected in our policy. That way progress lies; and progress is a law of principle.

Policy, to be living, must have elements of initiative, enterprise, experiment, adventure, and in the course of development occasional mistakes are inevitable. If, however, the foundations be sound—if policy be rooted in principle—they are not likely to be serious or irremediable. When discovered by experience, they can be corrected by a deeper study and more faithful application of principle, in which error has no part.

Only a policy governed by selfishness and based on the shifting sand of expediency can go from blunder to blunder until it collapses in ruin. The one thing that matters vitally is to accept government by principle (in which there is no element of experiment) in every detail of every day's business life; to have standards by which to judge, rules by which to act, which are firmly based upon that which is higher than ourselves. Principle must become part and parcel of us—in truth, we must be at one with the principle of life—so that action can never take place without its guidance. Policy so governed cannot fail of ultimate success, whatever temporary troubles may arise through human frailty.

The greatest amount of true success will be attained by the individual and the business which is consistently governed by principle; and the quality and permanence of the success will be in direct relation to the measure in which the truth of the governing principle is understood and obeyed.

We are frequently advised, very soundly, to study first principles. What are the first principles in business?

The One Principle

There is only one principle, first and last, in business life, in private life, in national life—the principle of service, which, being interpreted, is the principle of love.

There is only one commandment: "Thou shalt love." There is no need for any "Shalt nots." Love God—that is: Infinite goodness, absolute perfection —and thy neighbor as thyself. That is all, truly all. There is no need to tell you to refrain from doing evil to those whom you truly love.

Do you, as business men engaged in what appears to you to be the very material occupation of buying and selling goods, rather shy at the introduction of the word "love" into your discussions? If anyone is inclined so to do, let me beg of him to reflect for one moment on the fact that into every process of the manufacture, distribution and sale of every commodity, there enters from first to last the human element—the sower, the reaper, the hewer, the craftsman, the carrier, the salesman, and so on through the long list— and that it is a question all the time of human co-operative action, a tale of human relationship throughout. That being so, can we afford to leave out of our discussions—is it not, indeed, imperative that we should keep in the foreground of our thoughts—the word that expresses the highest and best in human relationships?

There is perhaps a tendency when love is mentioned to think only of one of its aspects—to think of "love affairs" exclusively. Far be it from me to speak with anything but reverence of the most sacred relationship between men and women; but surely the great "love affair" of the universe is the love of the Maker for the children of His creation, and the reflection by man of that supreme and perfect love. Our study must be to make our business—our service—a love affair in the highest sense, day by day, and without conscious effort.

It has been strikingly said that more people starve annually for want of love than for want of food; and when you think of the number of deaths by suicide as compared with the deaths from starvation, you see how true that statement is—for, as Henry Drummond acutely observed, rarely does anyone commit suicide so long as there is someone left to love and be loved by him or her. How can we pray, "Give us this day our daily bread"—the bread of love—if we withhold the bread of loving service from our neighbors?

The Principle of Service

Service is the principle of life in action, for it is the practical expression of love, the actual obeying of the Divine command.

What do we understand by love? Who are our neighbors in business? How can we give practical expression to love for them? These, then, are the questions we need to consider and answer in order that business may be governed by principle.

But, first of all, what do we understand by "business?"

We often hear the saying repeated: "Business is Business." That sounds at first an obvious, harmless platitude. It is not so, however; far from it, indeed, because in its implications and its applications it has proved an excuse for a deplorable disregard of truth, honesty and humanity in business; for a demoralizing distinction between honor in business life and honor in private life.

The phrase "Business is Business" acts like a soothing syrup (or a complete anaesthetic) on some consciences, enabling the business men possessed of them to adopt sharp practices; to "sail very near the wind;" to give short measure in quantity or in quality of service; to act, indeed, in the shop or counting-house as they would never dream of acting on the cricket field or in relations with their friends. These are those who regard business as a warfare between buyer and seller, with caveat emptor (let the buyer beware) as its leading maxim; and they become drugged, as it were, by the suggestion that "all is fair in love and war," which is implied in the phrase "Business is Business."

But is "all fair in love and war"? Of course it is not. Neither human love nor human warfare is exempt from the divine law: "Whatsoever ye would that men should do unto you, do ye even so unto them." Nor is business exempt from that law, which is but another form of the command to love your neighbor as yourself, which St. James called "the royal law."

Business not Warfare but Service

And is business a warfare? Not as understood by the best and most truly successful men in it. Business, to be worthy of our busy-ness in it, must not be regarded and conducted as a contest between those out to best each other, but as a form of mutual service, based on the one principle, love, and therefore as honorable as any of the other branches

of public service which we call professions.

Our "Neighbors" in Business

Who are our neighbors in the world of industry and commerce? Our neighbors in business are, obviously, our customers; our employees; our colleagues; those from whom we buy; and our competitors.

What is the love we have to demonstrate in service to them? Henry Drummond, in that beautiful essay of his on "The Greatest Thing in the World," describes as the "spectrum of love" the list of qualities set out by St. Paul as its component parts—and a wonderful spectrum it is: Patience, kindness, generosity, humility, courtesy, unselfishness, good temper, the guilelessness that knoweth no evil, and the sincerity that rejoiceth in the truth. All those component parts are needed—are they not?—for the rendering of perfect service to our customers, and in our relations with our fellow-workers and fellow-traders.

How do we best express these qualities of love in service to our customers? We do as we would be done by when we give our customers at all times and in all ways a square deal; that is, when we take care that every transaction is profitable for both parties, with the balance plus rather than minus for the customer.

Truth in Advertising

We express to them sincerity in action by always being truthful in all claims made for the goods sold, whether by salesman or by advertisement. Truth is the first principle in advertising. The man who lies in his advertisements is, indeed, not only a rogue, he is also a fool—if he wants to secure permanent maximum success; though the reason for being truthful in advertising must be a higher one than that of expediency—it must be, not because "honesty is the best policy" (which is the maxim of a would-be thief), but because honesty is an essential element of principle, and because it is inconceivable that you should steal—that you should obtain business under false pretences—from those you love.

The Customer's Point of View

We express our desire and exhibit our capacity to give good service to the customer by always carefully studying his point of view, seeing things from his side of the bargain, and meeting his needs and wishes in every reasonable way.

We demonstrate the principle of service by treating every complaint from a customer with courtesy, patience, good temper, absolute honesty, and a sincere desire to substitute good service for bad.

The "Acid Test" of Service

The treatment of complaints may, indeed, be regarded as "the acid test" of service. If the complaining customer is regarded as a nuisance at least, an enemy almost, a vexation certainly, there is something radically wrong with the policy of the supplying firm. It clearly is not based upon the principle of service.

Every complaint, if it is to result in the ultimate satisfaction of the customer, must be regarded, at any rate in the first instance, as being probably well founded.

Complaints Due to Misunderstanding

In my experience, in dealing with 800,000 customers for nearly twenty years, complaints are very rarely unfounded. They may be, they often are, due to misunderstanding—as are nine quarrels out of every ten; but the misunderstanding is as often as not caused by our failure

to convey our meaning or intentions lucidly, completely, and without ambiguity to someone who cannot be expected to know the technicalities of our business, or to realize our intentions by intuition, or to appreciate our policy unless it is made clear to the uninitiated. It is therefore merely stupid of us, and very unhelpful, to get annoyed with a customer for what is more than half our own fault.

Complaints Not Too Frequent

The fact is, not that the British customer complains too often and without cause, but that he does not complain as often as those whose guiding principle is service would wish him to do. Customers' complaints are rather too rare than too frequent. Some people will nurse a grievance for months or even years rather than take the trouble to grumble and have it out with you. But, given the complaint, the only way in which to demonstrate the sincerity of your desire to give true service is to start with the idea that "the customer is right;" to probe fearlessly and honestly into the cause of his dissatisfaction; to be absolutely honest in owning up to your fault, if fault there be; and to be generous beyond justice in making good the loss and inconvenience and annoyance the customer has sustained. Then you will be rewarded by earning his gratitude and regaining the confidence you have temporarily forfeited.

Confidence the Basis of Goodwill

And what a priceless thing in business —as in every walk in life—is *confidence*. It is the basis of goodwill, I am sure you will agree. Confidence means the absence of fear, does it not?—which in the case of the customer means the absence of the fear of being "done," cheated, exploited: whatever word you like best. Now, is it not true, in business as in every other relationship, that "Perfect love casteth out fear?" So we come back all the time to our fundamental principle, under which government we can never go astray.

If there is need of confidence, of friendship, of love between buyer and seller, there is equal if not far greater need for such relationship between employers and employed. Our employees are our neighbors indeed—unfortunately not so closely and obviously, none the less truly, in these days of large industrial organizations—and it is an imperative duty of the highest importance to secure that our relations with them are completely and permanently governed by principle, by love as expressed in service.

Responsibility of Employers

The root of industrial unrest to-day is want of confidence between employers and employed; and that want of confidence, that mutual distrust and fear, are largely due to want of courage, honesty, truth and love. To employers let me say with emphasis that the responsibility for removing those causes and improving the position rests largely upon you, upon those, that is, who have the knowledge and the experience, and should have the courage and the goodwill which alone can produce the necessary change. On this most important point, may I quote the fine words of Ruskin:—

"The universal law of the matter is that, assuming any given quantity of energy and sense in master and servant, the greatest material result obtainable by them will be, not through antagonism to each other, but through affection for each other; and that if the master, instead of endeavoring to get as much work as possible from the servant, seeks

rather to render his appointed and necessary work beneficial to him, and to forward his interests in all just and wholesome ways, the real amount of work ultimately done, or of good rendered, by the person so cared for will indeed be the greatest possible."

Importance of Motive

May I emphasize that all-important point of motive. Motive is directly related to principle. Motive is always far more important than appearance. Action should always be scrutinized for, and judged by motive; and our actions are so scrutinized and weighed up by our employees, who are wonderfully shrewd judges of motives. The employer's motive must always be right; must always be governed by principle. He must not put up welfare schemes for his employees just in order to get more work out of them, or because "everybody's doing it;" but because he really cares in his heart for the welfare of all those whom he employs, because he loves his fellow men.

It has been well said that "Love begets love"—that it is a process of induction—and unless you put genuine affection into your relations with your employees, you will not get affection, loyalty and confidence from them. Whatsoever a man soweth, that will he also reap. To-day we are reaping the fruit of many years of industrial iniquity by unloving, inhuman, grasping, selfish employers. That being so, we must be very patient, very persistent in our sowing of sound good seed, and not expect too speedy a harvest. But if we are sincere in our aims and wise in our methods, the response from our employees will surprise a good many pessimistic folk. It is true that no one has a keener scent for motives than the British workman; but it is true, also, that there is no one more responsive to right motive as evidenced by just and humane treatment, by love expressed in service.

Value of Trust

And, believe me, our employees respond, most of all, to trust. "The people who influence you most are the people who trust you and believe in you," says Drummond, and there never was a truer word spoken. My experience is that trust, given freely in the exercise of reasonable judgment, is very rarely misplaced. Trust your men, trust your staff, take them into your confidence, make them truly your friends by treating them as such. What said the Greatest Master to His personal staff?—

"Henceforth, I do not treat you as servants, for the servant knoweth not what the master doeth. I have named you friends"—and if you regard your workpeople as your friends, you will soon find that friends, wonderfully staunch friends, they will be.

Can any business achieve true success unless its customers and its employees are its friends?

Again, let me say the responsibility is ours. The initiative must be ours. It is not only useless, but mischievous and dangerous because it is unjust, for us to grouse about the unreasonableness and suspiciousness and ignorance and foolishness of those who work for us if we fail to do our part, if we fail to give them a bold and convincing lead, if we fail to give them the love wherewith to drive out mistrust and fear and hate.

As with our workmen, so with our staff and our colleagues. A house divided against itself never can make such progress as a house in which staff and chiefs are a "band of brothers." Give your staff and your colleagues your trust and confidence, and expect theirs—and

you will get them in return. Do you remember—it is a striking and most instructive fact—that one of Nelson's most prominent characteristics was that he took his captains absolutely into his confidence on every detail of his strategy and tactics? They always knew his mind, his policy, his principles. In action, they scarcely had to look for the flagship signals, they could so often anticipate them—because Nelson knew how to trust; and to know how to trust is one of the prime essentials of any leader of men, be it in battle, at sea, in factory, in office, or in shop.

Need for Internal Harmony

The staff, too, must be expected to trust and befriend each other, never asked or encouraged to spy upon and work against one another. Internal jealousies and suspicions will paralyze any business house, as they have paralyzed all too many Government—and municipal—departments. One of the chief causes of the failure of state enterprises is that officialdom is honeycombed with internal jealousies. Mutual confidence based on mutual love gives an organization a foundation on rock—the rock of principle.

Next to our customers, our employees and our colleagues, we have the people from whom we buy to regard as our neighbors in business, and our actions will be governed by principle if we treat them always as we would have our customers treat us. We shall find that they also will respond to confidence reposed in them.

Finally, we have our competitors in trade to regard and treat as our neighbors. This, perhaps, is at times, the greatest trial of our sincerity in practising the Golden Rule. To do so, we must not bear false witness against our neighbor. We must not say anything unjust of the man who is in the same business as ourselves. It is well for us to remember always that a good thing speaks for itself, and is never ultimately advanced by the disparagement of something else. We want to stand upon our own merits, not upon the demerits of others.

The foregoing are suggestions as to some of the practical expressions of love in service. Not lip-loyalty to the principle because it pays, but true service to our fellows because it is right. The essence of service must be unselfishness. Selfishness means death. If I may quote again from Ruskin, he says on the point:—

"So far as you desire to possess, rather than to give; so far as you look for powers to command, instead of to bless; so far as your own prosperity seems to you to issue out of contest or rivalry, of any kind, with other men or other nations; so long as the hope before you is for supremacy instead of love; and your desire is to be greatest instead of least, first instead of last; so long you are serving the lord of all that is last and least, the last enemy that shall be destroyed—Death."

But service—love—means life. "It is better not to live than not to love," said Drummond, or, as Browning put it:—

"For life, with all it yields of joy and woe
And hope and fear,
Is just our chance o' the prize of learning love—
How love might be, hath been indeed, and is."

Service—the practical expression of love—brings happiness and success only in so far as it is based on the desire not to be happy or to be successful, but to be of help to one's brothers and sisters, and so demonstrate our love of the Creator and all His children.

Let us reject for ever the phrase

"Business is Business" and all the mean and unworthy motives it implies; let us substitute for it the truth that Business is Service; and let us determine that all our policy shall be governed by principle, that principle which is love, whose reflection is seen in service to others—service before self.

* * *

Good Service

"A railroad that has a reputation for good service has an asset of incalculable value. It is service which brings patronage to the railroad. It is service which keeps business once it has been obtained.

"If the patron is helped on the train by the brakeman or conductor, if he finds his comfort looked out for, his inquiries answered pleasantly, his ticket asked for with a smile and assistance offered when he alights—all this means service.

"Good service depends not only upon what you do **but upon the way you do it.** This is true whether you be a clerk in a drug store or a brakeman on a railroad."—From "Service and Safety," a little booklet issued to Pennsylvania employes.

What is true of railroads and drug stores is true of gas companies—true, in fact, of every business, public utility or otherwise. Good service is a tremendous asset and it depends not only upon what is done *but upon the way it is done.*

Indiana Gas Association Meeting

The annual meeting of the Indiana Gas Association will be held at the West Baden Springs Hotel, West Baden, Indiana, on May 7 and 8. The Arrangement Committee promises a program of excellent papers and those desiring more detailed information should communicate with the secretary, Mr. E. J. Burke, Indianapolis, Ind.

ACCOUNTING SECTION

J. W. HEINS, Chairman — W. A. SAUER, Vice-Chairman

H. W. HARTMAN, Secretary

MANAGING COMMITTEE—1923

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DOERING, W. A., Boston, Mass.
FENNIMAN, J. R., New York, N. Y.
HALL, I. S., Boston, Mass.
HOFFMAN, F. C., St. Paul, Minn
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LAWALL, H. J., Philadelphia, Pa.
LAWRENCE, JAMES, New York, N. Y.
LYNCH, B. W., Chicago, Ill.
MEYERS, W. J., New York, N. Y.
MURFIT, W. G., Newton, Pa.
PATTERSON, F. H., Rochester, N. Y.
POTTER, O. F., Newark, N. J.
RASTENBURG, F. G., Indianapolis, Ind.
REESE, J. G., Baltimore, Md.
SCHMIDT, JR., WM., Baltimore, Md.
SCOTT, J. M., Wilmington, Del.
SHORT, A. F., Providence, R. I.
TOSSELL, A. L., Chicago, Ill.
WINTERS, A. C., Chicago, Ill.

Representing Affiliated Societies

ARMSTRONG, J. J., Toronto, Can. (Canadian)
CLINTON, DEWITT, Worcester, Mass. (N. E. Gas Eng.)
DEAL, E. C., Springfield, Mo. (Missouri)
GOODNOW, A. C., Jacksonville, Fla. (Southern)
HAASE, EWALD, Milwaukee, Wis. (Wisconsin)
HODGES, E. W., San Francisco, Cal. (Pacific Coast)
JAMES, F. M., Aurora, Ill. (Illinois)
KURTZ, ADAM, Detroit, Mich. (Michigan)
MCCABE, J. B., Dallas, Texas (South Central)
PETTES, W. H., Newark, N. J. (New Jersey)
PHILLIPS, R. E., Lincoln, Neb. (Iowa)
PORTER, EDWARD, Philadelphia, Pa. (Pennsylvania)
SCORELL, E. C., Rochester, N. Y. (Empire State G. & E.)
SHEARON, B. P., Hammond, Ind. (Indiana)
WILBUR, A. A., Brockton, Mass. (Gas Sales of N. E.)

CHAIRMEN OF SECTION COMMITTEES ORGANIZED TO DATE

Budget—F. H. PATTERSON, Rochester, N. Y.
Customers Accounting—W. A. DOERING, Boston, Mass.
Fixed Capital Records—H. J. LAWALL, Philadelphia, Pa.
Insurance—J. G. REESE, Baltimore, Md.
Nominating—EWALD HAASE, Milwaukee, Wis.
Relations with Customers—A. L. TOSSELL, Chicago Ill.
State Representatives and Contributions to Monthly—JAMES LAWRENCE, New York, N. Y.
Uniform Classification of Accounts—W. J. MEYERS, New York, N. Y.

Committee on Relations with Customers

A. L. TOSSELL, Chairman, The Peoples Gas Light & Coke Company, Chicago, Ill.

PROBABLY no other subject which could be assigned to a committee embraces so many different aspects of the business or has occupied so great a proportion of the executives' time and thought as the subject of "relations with customers."

There is no need, therefore, for any committee to stress the importance of this subject or the necessity for the careful formulation of a general policy of prompt, courteous, and adequate service to the customer. Service is universally recognized today as more truly the product we have to sell than the gas itself and is a condition precedent to the growth and prosperity of any utility.

But, just as the gas engineer, after carefully developing a process of manufacture designed to produce the best gas for the customer's purpose, must then turn to the manifold problems of its distribution, so the executive having formulated his policy of *Service* must get this over to his customer through the medium of many different departments embracing in some instances thousands of employees, who must carry the policy

to the various points of contact with the customer.

That such a policy, no matter how robust in conception, must necessarily lose much in the way of force and form in its transmission through many hands, is no less true than that the pressure in the outlying sections of the distribution system will in time become inadequate if proper measures for boosting this pressure are not taken by the distribution engineer.

Therefore, while the Committee on Relations with Customers will make a study of the service policies of gas companies, it will concern itself even more intimately with the *means* by which these policies are carried into effect and the customer's reaction to such policies as they are presented to him in the contacts he has with company employees. It will be concerned with the character of the personnel adapted to carry out service policies and the means of securing, developing and improving this personnel to proper service standards; it will be concerned with departmental organization and coordination for the prompt routing of orders; it will consider particularly difficult classes of complaints and means for their disposition; particularly progressive organizations or policies adopted by individual companies to improve or expedite their service will be studied and described; and the entire chain of departmental service contacts with the customer from the time of his application for gas, through the handling of credits, complaints, sales of appliances, etc., up to the collection of the final bill will be included in the Committee's consideration of the *means* of carrying the company's ideal of service to the man who gives us business.

To cover the various phases of the program the Section has appointed a committee with a membership representing executives in all the various departments concerned with customers' service. This committee at their organization meeting has divided the task of collecting the data required for their study among the following sub-committees:

Sub-Committee on Coordination of Order Taking and Order Executing Departments:

O. F. Potter, Chairman, Public Service Gas Co., Newark, N. J.
R. F. Bonsall, Consolidated Gas, Elec. Lt. & Pr. Co., Baltimore, Md.
A. M. Boyd (Distribution Dept.) U. G. I. Co., Philadelphia, Pa.
John DeMaine, Northern States Power Co., Minneapolis, Minn.
W. A. Doering, Boston Consolidated Gas Co., Boston, Mass.
Joseph Lucena, Syracuse Lighting Co., Syracuse, N. Y.
F. H. Patterson, Rochester Gas & Elec. Co., Rochester, N. Y.
J. M. Scott, Wilmington Gas Co., Wilmington, Del.

It was decided that this committee should deal primarily with the possibilities of improvement of customer's service in the closer coordination of departmental work, expediting the taking and routing of orders between departments and the establishing of proper interdepartmental contact and routine to this end. Consideration will be given to the physical layout of offices and departments in so far as this applies to the committee's field and along these lines particular attention will be given to the development towards the centralization of all records giving information as to customers' applications, status of complaints or orders for appliances, so that this information is most readily available to the department answering inquiries

submitted by the public. Organization of the gas companies at Baltimore, Rochester and Syracuse will be studied carefully in this connection.

Sub-Committee on Development and Education of Personnel:

A. F. Short, Chairman, Providence Gas Co., Providence, R. I.
A. M. Boyd, U. G. I. Co., Philadelphia, Pa.
DeWitt Clinton, Worcester Gas Light Co., Worcester, Mass.
G. M. Hergesheimer, U. G. I. Co., Philadelphia, Pa.
P. W. Herring, The Peoples Gas Light & Coke Co., Chicago, Ill.
F. C. Hoffman, St. Paul Gas Light Co., St. Paul, Minn.
Joseph Lucena, Syracuse Lighting Co., Syracuse, N. Y.
P. M. Scott, C. H. Tenney & Co., Boston, Mass.
J. R. Fenniman, Consolidated Gas Co. of N. Y., New York, N. Y.

This sub-committee will consider gas company practices and improvement therein with regard to:

(a) Selection of personnel adapted to carry out company's policy in contact with public.
(b) Development of this personnel through other departments.
(c) Education of employees, including instruction to clerical employees on technical phases of their work, classes to improve the handling of correspondence, meetings of employees to instill both office and outside employees with the company's policy regarding courtesy, method of approach when dealing with customers, etc.

The above work will include a consideration of the means large companies have used to transmit to their employees their policies, practice, etc., in the form of booklets, advertising matter, etc.

Sub-Committee on Credit and Collection Policies and Contractual Relations with Customers:

J. M. Roberts, Chairman, The Peoples Gas Light & Coke Co., Chicago, Ill.
DeWitt Clinton, Worcester Gas Light Co., Worcester, Mass.
John De Maine, Northern States Power Co., Minneapolis, Minn.
J. M. Curtin, Laclede Gas Light Co., St. Louis, Mo.
H. C. Schaper, Milwaukee Gas Light Co., Milwaukee, Wis.
J. M. Scott, Wilmington Gas Co., Wilmington, Del.
J. J. Armstrong, Consumers Gas Co., Toronto, Canada.

The sub-committee will consider the general collection and credit policies of company members from the broad viewpoint of their effect on the customer's attitude, influence on securing new business, etc. It is proposed that this work embrace the whole field of contractual relations with customers, including the application for gas, rental contracts, etc. The question of any unnecessary restriction of service due to present credit practices and the possibility of dispensing with application forms or the simplification of the forms and routine connected with the customer's application for service are to be considered.

Sub-Committee on Complaints:

G. M. Hergesheimer, Chairman, U. G. I. Co., Philadelphia, Pa.
P. C. McDonald, The Peoples Gas Light & Coke Co., Chicago, Ill.
H. C. Schaper, Milwaukee Gas Light Co., Malwaukee, Wis.
R. F. Bonsall, Consolidated Gas, Electric Lt. & Pr. Co., Baltimore, Md.

This sub-committee is to consider particularly the practice in handling high bill complaints, the use of test registers

and any special means of handling difficult cases of adjustment between company and customer.

The chairman pointed out that the above committees in covering their work should in general devote their efforts—

First, to a survey of the existing practice and policies of gas companies covering the field outlined—this information to be obtained through the companies and affiliated organizations represented by the membership to the committee.

Second, to consider making recommendations as to improvements and modifications of such practices, primarily from the standpoint of increasing the customer's satsfaction in the quality and promptness of the service rendered.

This latter part of the work may involve the full description of the routine and practice of certain companies where the practice seems to be particularly desirable from a public relations standpoint.

It was urged that the committee stress throughout the report that it is the company *as a whole* that is doing things and not any particular department; to get away from the departmental idea except for the convenience of nomenclature and division of work and to correct the present condition where men are apt to view all problems from the narrow standpoint of their own department.

From the animated discussion that took place at the committee's meeting on all phases of the above work, it was apparent that the subject matter of this report will prove to be of interest to all gas men. It was decided, however, that rather than send a general questionnaire to all gas companies, that the data for the committee's report should be secured through the companies represented in the committee's membership and that of the managing committee. At a meeting to be held February 19, the exact nature of this data will be decided upon and the work of its collection initiated.

In a later issue we will publish an outline of the data to be collected as decided at the February 19 meeting so that members who have information of use to the committee and who may not be represented on its membership will have an opportunity to submit it to the chairman for incorporation in the committee's report. As no general questionnaire will be sent out, this voluntary assistance by member companies will be appreciated, and we know their interest in this matter will be well repaid by a well-balanced report on this subject at the convention.

Iowa District Gas Association's Convention

The Eighteenth Annual Convention of the Iowa District Gas Association will be held on April 18, 19 and 20, at the Hanford Hotel, Mason City, Iowa. The Secretary, Mr. H. R. Sterrett, promises that the papers will not only be interesting but well worth a trip to Mason City on those dates.

ADVERTISING SECTION

B. J. MULLANEY, Chairman — J. M. BENNETT, Vice-Chairman

CHARLES W. PERSON, Secretary

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HUMM, A. W., New York, N. Y.
LEACH, F. A., JR., San Francisco, Cal.
POTTER, CLYDE H., Los Angeles, Cal.
PREESANO, E. P., New York, N. Y.

Representing Affiliated Societies

BURNS, J. J., St. Louis, Mo. (Missouri)
CAMPBELL, E. C., Benton Harbor, Mich. (Michigan)
CLIFFORD, F. S., Fitchburg, Mass. (Gas Sales of N.E.)
CRONE, F. W., New York, N. Y. (Empire State G. & E.)
DEFREESE, S. E., Chattanooga, Tenn. (Southern)
ENGLISH, A. L., Council Bluffs, Iowa (Iowa)
FRANKLIN, S. J., Millville, N. J. (New Jersey)
GOULD, WM., Boston, Mass. (N. E. Gas Eng.)
JANSEN, F. A., Ottawa, Ont., Can. (Canadian)
JASPERSON, R. O., New York, N. Y. (Wisconsin)
MULHOLLAND, S. E., Fort Wayne, Ind. (Indiana)
MYRTLE, F. S., San Francisco, Cal. (Pacific Coast)
ROLSTON, R. J., Philadelphia, Pa. (Pennsylvania)
SOULES, E. E., Peoria, Ill. (Illinois)

Providence Boys Visit Gas Plant

FROM the time a boy begins to wonder how the motorman steers a trolley car so straight until the day he walks to the front of the hall and receives his high school or college diploma there is one question always uppermost in his mind.

"What are you going to be when you grow up, Johnny?" asks a friend of the family. Johnny's answer usually depends upon his age. He has an open mind and he changes it frequently. His greatest handicap in deciding upon his life work is a lack of first-hand knowledge of the various callings which he considers from time to time. It was almost impossible in the old days for a boy to visit industrial and business concerns to see how they were operated.

Times have changed. There is a group of Providence boys between the ages of 11 and 16 that is studying jobs, in addition to acquiring the knowledge which is necessary to hold them. The youngsters are welcomed at the largest and smallest industrial plants in Providence. They are members of the Providence Junior Chamber of Commerce and the primary purpose of this organization is to help the members to decide upon their future vocation in life.

Every Saturday morning during the school year the youngsters inspect one of the leading industrial or business houses in Providence. These are called educational tours, but the word "educational" does not worry the Junior Chamber members. It is education with plenty of good, wholesome fun added.

"When 50 red-blooded, American boys devote practically every Saturday morning for eight months to the activities of a certain organization, it's safe to say that they are enjoying themselves," remarked one of the officials of the senior chamber.

Activities of the Junior Chamber of Commerce for 1922-23 began with a hike to the Providence Gas Company's plant at Sassafras Point. More than 50 members answered the roll call, which was

held in the Chamber of Commerce auditorium.

Little time was consumed by the business meeting, and shortly after 10 o'clock the boys lined up in front of the Chamber of Commerce building. "Route step" was the order of the day and of the march. Arriving at the entrance to the plant, the boys were allowed to pass unchallenged by the guard, who is ever alert to learn the identity and business of ordinary visitors, who are also required to wear a numbered badge. Ordinarily, there are no "privileged" guests permitted to roam through the plant where the gas for the city of Providence is manufactured, but the members of the Junior Chamber of Commerce received the keys to Sassafras Point, both figuratively and literally. The "welcome" sign, printed in large letters across the wall of the dining room, was written over the countenances of all the employes in broad smiles.

Things began to happen as soon as the boys halted in front of the superintendent's office. "Somebody is going to get a new pair of ice skates before Christmas," announced R. L. Fletcher, assistant engineer of manufacture. "Frederick C. Freeman, vice president of the company, has sent word that he will give a pair of skates to the boy who writes the best story about what he sees here this morning," he continued.

This was the occasion for the second demonstration of the day, and, after the boys had quieted down, Mr. Fletcher explained that the stories would be judged with due regard for the age of the writer. "The prize-winning essay will be the one which gives in the most entertaining manner an accurate description of what you are shown here to-day. The observations of a 12-year-old boy may make a better story than those of a 16-year-old lad, although the latter may know a little more about the use of correct English."

Immediately, there were 50 reporters on the job. At least, they looked as reporters are supposed to, for practically every one accepted Mr. Fletcher's offer of pad and pencil, and there was an open season on note taking from then on. There is plenty of material for a good story at the gas company's plant, and the youngsters made certain that no detail was overlooked.

As is customary when inspecting large plants, the boys were divided into small groups, each one being in charge of one of the plant engineers or foremen. After the guides had been introduced to their charges, the little parties set out for different sections of the plant, and for more than two hours the boys watched the various processes of manufacturing gas and coke, which are supplied to thousands of people throughout the city.

Cries of exclamation and a barrage of questions were raised as the guides explained the numerous stages through which coal and gas pass. It was pointed out that the company's equipment is worth nearly $8,000,000, and, while the Sassafras Point plant represents one-third of that amount, the other two-thirds is buried under ground. The "buried treasures" are pipes running to every part of the city.

Most interesting to the majority of boys were the coal ovens, where the coal is baked after it has been "cleaned" and broken up. The guides showed how 11 tons of pulverized coal are charged into the ovens and baked at a temperature of 2000 degrees Fahrenheit. Then, as the visitors drew back at a safe distance, one of the ovens was "pushed," which is the technical term for emptied.

The gas had passed off through huge pipes to the buildings, where it is purified, and the 11 tons of white-hot coke were pushed from the oven into a large steel car. It was then drenched with water and the great clouds of steam could be seen from every part of the plant. This is the most picturesque process in the manufacture of gas, and to the 50 boys who saw it for the first time it was the most thrilling.

Although the wind was blowing hard and coal dust and smoke came driving into their faces and sifting into their shoes, the young visitors did not neglect a single opportunity to climb up to the top of the tall coal chutes or scramble over the ovens to watch the charging machine.

One large building, from which a sheet of flame belched forth every few minutes, was the object of considerable speculation. Here, the guides explained, water gas is made, and contrary to general belief, it is not manufactured in the basement of Turks Head building, where the company's main offices are located. They added that water gas is not made of water, but rather is a combination of other gases mixed with oil, which makes what is sometimes called "blue" gas.

Somehow word got around that there were to be some "eats" after the tour of inspection was concluded, and by one o'clock the company chef and the cafeteria in the office building were the two most popular objects within a couple of miles. Sandwiches, cocoa, apple pie and ice cream never tasted so good, and the cheering which greeted the appearance of "seconds" all around completely drowned out the victrola music, which accompanied the luncheon.

Vice President Freeman, who, after all, as host of the day and donor of the prize skates, was the hero of the occasion in the estimation of every boy in the crowd, arrived just before the fellows piled into the dining room. After the meal was over he made a short speech, and then, just as the youngsters were leaving the grounds, he reminded them of the skates and told them that he hoped some, at least, would decide to go into the gas manufacturing business when they grew up.

And then, after the last cheer, 50 tired but happy and wiser boys headed homeward. "You can't fool them with the old story about water gas being made in the basement of Turks Head any more," remarked Mr. Freeman, "and, who knows, perhaps one of those youngsters will be on our engineering staff 10 years from now."—*Providence Sunday Journal.*

Convention of the Natural Gas Association of America

The Annual Convention of the Natural Gas Association of America will be held at Louisville, Kentucky, April 16 to 19. It will include an exhibition of field and utilization equipment made by the Natural Gas Supply Men and this, with the excellent list of papers and speakers on the program, will make it a most interesting and profitable meeting.

THE only place where it's fun to have smoke and ashes with your food is at a picnic.

Not in the home!

Years back, cooking had to be done over an open fire —and it improved neither the food nor the temper. Then came stoves—and the day of wood and coal. Much better, these—and our memories still carry thoughts of those days in the kitchen. But someone had to carry out the ashes—and the smoke and dust caused many an extra hour, keeping the house clean.

Today it is better—it is a different story.

Today is the day of Gas Fuel—clean!

"Clean!"—that is the most impressive thing about Gas. Clean homes, clean work, clean food!

It is a common—an ordinary event, to cook with Gas, so accustomed are we to it. Yet—give it a thought. Is it not an unconscious pleasure?—so easily and surely does it function. No longer the bother, and smell, and dirt—your kitchen is really miles away, connected by a long pipe—with someone else "bringing in the fuel, and carrying out the ashes."

For you—Gas is right where you want it, under the kettle! It is there whenever you choose to use it and as much or as little as you wish. A twist of the wrist decides it!

Above all—it is Clean!

A great Organization works night and day to make it so—and 66,000 users find it so!

"Good Gas Service"

Consumers Power Company

That's a task for any Cook!

Yet, Consumers Power Gas Service must do it—

Do you recall?—Napoleon said "An army moves on its stomach." True today—not an army, but greater, the nation. Without food, there is no life. Work or play —we move because we eat.

197,000 meals every day—it is the duty of this Company to provide for them. Food must be cooked—and three times a day our customers use Gas to do it!

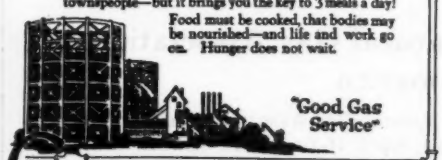
What does this mean? Three times a day, practically within the same hours in every home, there is an imperative need for Gas. It must be there to meet the instant wish of every user—in unlimited supply.

And it is there! Day upon day—Gas is supplied for your use at any hour—ample, clean, easy to use.

Back of this Consumers Power Gas Service is a great production system—and a loyal force. Twenty-four hours a day, this organization serves you. To meet your needs—to cook the meals of this community—a great work must be done: Providing of plentiful fuel, seeking for better methods of service, constant testing, endless operation, dependable delivery.

All this represents a great investment of time and money—much of it the invested savings of your own townspeople—but it brings you the key to 3 meals a day!

Food must be cooked, that bodies may be nourished—and life and work go on. Hunger does not wait.



"Good Gas Service"

Consumers Power Company

Typical Good Will Advertisements of the Jackson, Michigan, Company

Advertising "Good Public Service"

FOR nearly a year the people of Baltimore have had the gas and electric company of their city for breakfast and dinner in the form of newspaper display advertisements. In the morning and afternoon newspapers, week after week, readers have found themselves brought face to face with advertisements occupying from three-quarters of a page to a full page, setting forth the relations of company and public, and written in a style carrying conviction as to the closeness of this relationship.

The keynote of the campaign is "Good Public Service." This phrase is a conspicuous part of each one of thirty-four advertisements. In carrying this thought forward, the copy deals with the people of the community as the company's friends and neighbors. The readers are made to feel at home with the corporation management. The formal and official atmosphere of the old-time gas and electric company is entirely dispelled, and the effect of constant reading of the advertisements is akin to that of a series of afternoon teas in the homes of intimate friends.

This is accomplished by means of an illustrated tour of the company's extensive plant through the medium of newspaper space. On this tour the public is made to feel that it is not only welcome but wanted. The atmosphere is friendly throughout, and the visitors are made to feel that the company-host has no secrets and no hidden mysteries. The open-door policy is dominant and convincing.

In making the tour all phases of production, distribution and service are emphasized. The spirit of public convenience finds expression in the constant use of phrases concisely conveying the idea of what is meant by the company's readiness to serve. "You strike a match and your gas range is ready for instant use." "You press a button or light a burner and your electric or gas service is ready for instant use." "You press a button and the power is there." "You press a button and put a river to work for you." These are some of the lines given frequent and constant repetition.

To make clear their meaning, these phrases are followed by such lines as: "Back of the burner, ready to supply the gas in any quantity you desire, whenever you need it, are 860 miles of main and 1,000 miles of service pipe." "Back of the button, back of the burner, ready to light your home, to cook your meals, to wash your clothes, to clean your rooms, are the generating plants, the distributing systems and a faithful organization of 2,900 men and women. Together they form the strongest and most useful servant of the people of Baltimore." "Back of the button, driving the wheels of industry, running the street cars, lighting the streets, performing myriad useful tasks in homes and factories, are the great electric generating stations . . . . . Forty miles away, the Susquehanna River is driving the largest hydroelectric plant south of Niagara and east of the Mississippi for you. Here in Baltimore are steam stations twice as great as the mighty plant on the Susquehanna, ready at your instant command."

Back of these statements, and giving them strong visual support, are illustrations which are the dominant features of advertisements. One picture may be a half-page reproduction, in admirable line

drawing, of a local power plant. Another may show in half-tone of similar size the great dam on the Susquehanna. Another shows the steel-tower transmission lines leading from the hydro-electric plant, with a touch of human interest afforded by the line patrol and his faithful horse, engaged in the constant task of guarding the wires and towers against the causes of interruption to service. Elsewhere is an illustration showing the massive station meters through which 3,000,000 cubic feet of gas may pass in an hour. Another picture shows the electric testing department, through which passes all electrical equipment used or sold by the company—and so on, through all branches of the organized operations which make a complete service possible.

Incidental activities are treated in similar spirit. One full-page advertisement was devoted to the private branch telephone exchange of the Gas and Electric Company. At first thought, it might not seem that advertising a telephone exchange would sell much merchandise, but as interpreted by the copy and illustrations, this private exchange becomes an integral and intimate part of the company's organization. The page is introduced by the line: "This is Plaza 8000, where you get good public service." With this introduction the advertisement proceeds: "Plaza 8000 is a gateway to good public service that never closes. You lift the receiver of your telephone, say Plaza 8000, and are connected with your gas and electric company's exchange—the switchboard operated by 14 competent women who handled 4,000,000 calls last year, to and from 541 telephones in the company's buildings and operating stations. You will find Plaza 8000 a quick and convenient way to transact business."

Throughout the series, emphasis is placed on the telephone as a means of reaching the company with complaints concerning the service. In practically every advertisement the following phrases show up conspicuously: "Is your service good? If not, please let us know. Telephone Plaza 8000, general service department."

It is significant of the importance attached to this invitation to complain that in an internal report on the advertising campaign, attention is directed to the circumstance that this invitation has been printed and circulated 15,810,000 times.

As a part of the unseen service of a modern gas and electric company, attention is directed to the task of planning for the Baltimore of to-morrow, in addition to providing for the Baltimore of to-day. To accomplish this, it is pointed out, involves constant study on the part of a group of distinguished electrical engineers. "The design and construction of the power plants and distributing system," continues this advertisement, "call for engineering skill of a high order. These electrical engineers and the departments they direct are at work for you day by day, devising the means by which a great river or a gigantic steam station is at your command whenever you press a button." This advertisement is a notable example of the use of illustrations in the series, for fully three-quarters of the space is occupied by a drawing which shows a corner of a drafting room, with a window-vista of the power resources of a great commercial and industrial city.

Incidental to the emphasis placed on

good public service is the attention paid to customers as potential and actual stockholders in the corporation. The wish is expressed that users of the company's service should become stockholders and share in the earnings. In connection with this line of invitation, one advertisement points out that public service corporations are no longer owned by groups of large capitalists, and that today the stockholders are made up of the general public. It is pointed out that in a recent offering of $2,000,000 of seven per cent preferred stock "at least 4,000 more of the company's customers became additional subscribers for stock."

Since April, 1922, the number of advertisements appearing, to date of writing had been thirty-four. The end of the campaign is not yet in sight, and it is understood that the company's present policy is for continuing it indefinitely.—*Printers' Ink.*

The Press and the Utilities

"There has been no time during the many years that I have been in the public utility business when our industry has been better understood by the newspaper press of Indiana than it is just now. This understanding is reflected by a keener appreciation of utility problems on the part of the public than has ever obtained before, to my knowledge.

"The public and public utilities can get along together in common benefit only when there is mutual understanding. I think I am safe in saying that Indiana's people and the utilities of the state owe their present degree of harmony in large measure to Indiana newspaper publishers. I feel that we have a debt of gratitude to the publishers for the open and sincere manner in which they have dealt with problems affecting us and the people."

—Charles L. Henry, President, Indiana Public Utility Association.

Winning Confidence

It is not difficult to realize that one of the biggest jobs of this Committee has been to overcome prejudice and suspicion. The utility business is big business, the biggest business in business. And it has to be big. The bigger it becomes the better it can serve and the cheaper it can serve. But there has been an antipathy in the public mind against big business.

Possibly this prejudice can never be overcome in the minds of all of the people. It can be overcome in the minds of many. But it cannot be overcome immediately. Nor can it ever be overcome without a united industry cooperating to give good service cheaply and being fair and square with the public at all times.

—Joe Carmichael, Iowa Committee on Public Utility Information.

Newspaper Advertising for Gas and Electric Companies*

ADVERTISING has become systematic, scientific, and *trustworthy,* and is being read and studied more and more by the public. Newspaper advertising is no exception. In fact, newspaper advertising, especially when the medium is a daily publication, is unquestionably the quickest and perhaps the surest means available for conveying a message to the public.

The Newspaper Commodity

Newspapers have for sale a definite commodity—advertising space. The columns of the newspapers have intrinsic value for advertising purposes, regardless of what appears in the news and editorial columns. Whether the paper is "friendly" or "antagonistic" in its attitude toward the advertiser has no bearing on the value of the advertising space.

Value of Newspaper Space

The value of newspaper advertising space to the advertiser depends:

(a) on the circulation of the newspaper, consideration being given both to class and volume.

(b) on the use made of the space by the advertiser.

Circulation

The circulation of a newspaper is primarily local. The readers of every newspaper are therefore practically all either actual or potential customers of the local utility company. Consequently, the value of newspaper advertising space for utility advertising is, from the standpoint of circulation, established without argument. Also, this is the phase of the value which is principally emphasized by the newspapers themselves.

Use of Space

The use made by the advertiser of the space purchased is, however, a much more vital factor in securing value for the expenditure. The possibilities of use, particularly relating to the problems to be solved by gas and electric companies, have not been sufficiently emphasized by the newspapers in selling their commodity. The probable reason is that the newspapers were unfamiliar with the problems and unacquainted with the peculiar features of the utility business. The result, however, is that the newspapers have failed to sell their commodity to the utilities except in very limited quantities, with consequent loss to both parties.

Results to be Expected

Newspaper advertising of the right charcter will:

(a) increase sales.

(b) improve the standing of the utility in the opinion of its customers and of the community generally.

Essentials

Essentials for the success of newspaper advertising are:

(a) *Regularity*—in order that readers may expect and look for the message and because occasional advertising is liable to create suspicion, whereas, confidence is of the utmost importance.

*Report of Advertising Committee, Empire State Gas and Electric Association.

(b) *Repetition*—in order that the message may be hammered home.

(c) *Form*—which includes:

(1) *Character of copy.* It must be interesting. It must be written not from the angle of the utility, but from the angle of the customer, or prospective customers. It should, in all cases, be brief.

(2) *Character of typography and general physical appearance.* This should be distinctive, and so nearly uniform that the physical appearance stamps the advertisement as the utility's.

Kinds of Advertising

For the gas and electric industry there are two kinds of advertising which may be termed direct and indirect.

Service Advertising

A company sells gas or electricity or both, as its main, basic business. Direct advertising is that which specifically states the merits of gas or electricity and the work which they do, which compares the small expense of the service with its large value in usefulness and convenience and which describes the service which the company renders to its customers and to the community by furnishing gas or electricity available at all times and in any quantities required. It may well be designated as service advertising. It would seem that this type of publicity might well be considerably increased by the utility companies throughout the state. There is very little advertising of this kind being done in New York state at the present time.

Appliance Advertising

Indirect advertising is that which, while not telling directly the merits of gas or electricity, nevertheless, contributes to increase gas and electric sales. Appliance advertising is the outstanding example of this kind of advertising. It is useful and valuable both to the community and to the company. It contributes little, however, towards the improvement of a company's standing in its community while service advertising, if properly done, will have a most decided influence in this direction. Appliance advertising, nevertheless, now constitutes the principal part of the newspaper advertising of gas and electric companies.

Good-will Advertising

Educational advertising, sometimes called good-will or institutional advertising, is also indirect. It may be used with benefit in connection with service advertising and is valuable. However, it should have a direct reference to the company's local situation bearing upon such themes as — continuity of service; the investment and organization necessary to bring about improved service; reading and testing of gas and electric meters, including features relative to the state's test and approval; where the company's dollar goes; suggestions for economies in the use of gas and electricity, and non-technical explanations of how to bring them about, as well as various kindred features.

The utility company is one of the community's most valuable servants. Under modern conditions it is indispensible to comfort and happiness; its service carries efficiency and economy into business establishments and performs easily household tasks which otherwise demand much time and labor. The business gives employment and puts money into circulation; it pays in taxes a substantial proportion of the expense of

government. These points might well be emphasized in good-will advertising.

Advertising Securities

Advertising of securities in customer ownership movements is a special proposition, but it may be so conducted that in addition to disposing of the securities it will be of the greatest benefit in improving the standing of the company in the community.

All Advertising is Useful

What has been set down in reference to the various kinds of advertising suitable for newspapers' columns is not intended to be taken as disparaging any of them. To paraphrase an old saying, "All advertising is good, but some is better than others." A company which wisely plans its advertising, and every company should adopt a definite program and make adequate appropriation therefor, will endeavor to maintain a fair proportion between service advertising, good-will advertising and appliance advertising.

The Advertising Program

Service advertising is the most direct. It is the most influential in improving the standing of the company in the community and in showing the customer the big value received for every dollar paid for gas or electric service. It is the hardest kind of copy to write but it should, nevertheless, have the first place on the program instead of the last place, which it now occupies.

Next should come good-will advertising, but the greatest care should be exercised to make this copy brief, snappy and attractively set up. Reader interest has got to be aroused. Service advertising is interesting to the reader because it shows the value which the buyer receives and the uses which can be made of the service. Good-will advertising tells the story of the company's operations and achievements. This has got to be made interesting or it won't be read and the money paid for the space will be largely wasted.

Appliance advertising should come third on the list because handling appliances is only an incidental part of the company's business. This is the easiest kind of copy to prepare, which probably accounts for the fact that it now occupies first place on the program of most gas and electric companies. The appropriation for this class of advertising may properly be based on the merchandising business done while the appropriation for service and good-will advertising should be based on the sales of gas and electricity.

Newspaper Co-operation

As has been stated, the newspapers have apparently failed to demonstrate the possibilities of the commodity they are selling—advertising space—to the gas and electric companies of New York State. It would certainly be to the mutual advantage of both the newspapers and the companies if there could be greater co-operation in this matter in the future.

Newspapers, in some instances, maintain service departments with the especial purpose of aiding their customers in utilizing the newspaper commodity, advertising space, to its full value. Where the newspaper does not maintain such a department, its personnel might well study the merits of this commodity to the local utility company. Co-operation with the utility company in deciding what to advertise and how to advertise it, based on local conditions, would unquestionably result in larger sales of space by the newspaper and in greater value to the utility for its expenditure.

An Editor's Viewpoint

NEWSPAPERS are published largely with the funds gained from advertising. But to provide a medium for advertising, their news columns must be interesting, informing, accurate and public-spirited, and so you have found that they welcome all the actual news of your business which affects your capacity for public service.

But news must be readable and it must be news. That is where the judgment of the newspaper enters the equation, and it is here that most of you have had your troubles with this powerful but unfamiliar instrument, so essential to your situation, so willingly loaned to you, but so likely, when misused, to come down on your heads instead of upon the pate of a public misconception of your affairs.

Some of you have employed trained newspaper men as your publicity agents. That is an excellent step, but watch it! The use of these men to sift from your daily routine and to condense from your necessities what they know to be interesting and important to the public is a valuable function. But the attempt, through their offices, to fill newspapers with selfish items, designed to influence instead of to inform, is ill-judged and brings upon your business a harmful reaction. Even those newspapers which, out of extra zeal or for a selfish purpose, fill their columns with such items cannot fool the public. It knows in a minute the difference between news and propaganda. If you succeed in having articles published free that ought to be labeled "advertising," the American newspaper reader is not influenced, except against you.

But if you give the papers news for their news columns and sensible arguments for their advertising columns, you get incredibly good results.—ARTHUR KROCK, *Editor, Louisville Courier-Journal and Times.*

Wisconsin Utilities Association Convention

On March 22 and 23, the Wisconsin Utilities Association will hold its annual convention at the Hotel Pfister, Milwaukee, Wis. The program announced by Secretary John N. Cadby embraces live topics in manufacture, sales, distribution and accounting, and in addition several eminent speakers have been secured. A reading of the program itself will convince any gas man that he should not miss attending this meeting.

Question---Why Does the Gas Company Advertise?
Answer---It Pays to Advertise.

MAKING OUR SERVICE WORTH MORE TO YOU

The Purpose and Plan of Our Service Advertisements

TWO things are necessary for Good Public Service, efficient production and efficient use. Our efforts to furnish Good Public Service can only go part of the way. We need the co-operation of the Public. For, in order to get the best results, our customers must use the service efficiently.

The purpose and plan of the series of service advertisements which have been appearing in the newspapers is to bring about this co-operation, which means good public relations. The advertisements accomplish this purpose by addressing the same message to two groups of people:

1. Our employes, who serve.
2. Our customers, who are served.

The employes have been directly addressed through placards carrying the ads. on bulletin boards placed throughout our plants. The customers have been addressed through that universal, indispensable medium, the daily newspapers.

The theme of the advertisements is Good Public Service, and they are confined in their scope to the physical properties useful in the public service, the personnel, the raw materials from which gas and electricity are made, and the investment by our customers in their Company's Stock and the methods employed to follow up and remedy complaints.

The advertisements have but a single purpose---to inform.

THE advertisements inform our employes of the magnitude of our Company's responsibilities to the people of Baltimore and extend the employe's knowledge beyond the limits of his special branch of work to the physical operations of the Company as a whole.

The advertisements inform our customers of the comprehensive character of the service designed for their use, acquaint them with the physical extent of the plants and distribution system, and the duties of the men and women who operate them.

Out of correct information, comes understanding. From understanding comes confidence, and with confidence there come co-operation and good public relations.

The dissemination of accurate information cannot fail to result in understanding, which is mutually helpful. Results have demonstrated that this is the case.

EACH advertisement carries a single message concerning some important phase of the Company's ability to serve its customers, and is accompanied by the single invitation to the customer---the invitation to complain of any poor service condition.

Local conditions which the Company cannot remedy without knowledge of their existence interfere with Good Public Service. No charge is made for investigating complaints or making minor adjustments.

ADVERTISING of this nature is essentially a question of service. The cost of the advertising is a service investment. The series was started in April, and 40 advertisements have been printed. They have had a total circulation of 20 million copies, and the invitation to complain of poor service conditions has been repeated 20 million times. The cost of the newspaper space from April to January 1 is equivalent, on a yearly basis, to about one cent a month for each meter.

THE series has actually had the effect of reducing advertising expenditures. The reason for this is that the advertisements have attracted attention, which is the thing that any good advertisement must do. There is nothing new under the sun, and the series has only applied an old method to a new subject. The advertisements, therefore, have possessed novelty. Generally advertisements are written so that he who runs may read, but this series has created a situation where, to quote an old friend, "He stopped running and read with interest." The advertisements have told the truth, and truth is stranger than fiction.

The advertisements are making our service worth more to you. They are productive of operating economies through better teamwork, and are of much value to our customers in suggesting ways to improve the conditions under which they utilize electric and gas service.

We seek to promote thrift and safety in the use of appliances, as well as convenience.

Good Public Service

THE GAS & ELECTRIC CO.

Is Your Service Good?
If Not, Please Let Us Know

Telephone Plaza 8000
General Service Department

A recent advertisement explaining why the Baltimore Company advertises. This is one of the finest tributes ever paid to advertising by a public utility company.

Des Moines' Long Record of Achievement

Is Interwoven With The Story of the Growth and Development of the Des Moines Gas Company

A CONSERVATIVE, thoroughly progressive policy has placed and kept Des Moines in the forefront of commercial activity—that same policy has characterized this institution from its inception.

WE ARE endeavoring to give our patrons absolutely reliable service, fully appreciating the growing needs of our city, and providing every means toward making our service adequate

Use Gas For

Cooking
Lighting
Space Heating
& Industrial Heating

You Can Do Better With Gas

Gas Efficiency

Gas as fuel promotes economy—insures maximum production—through instantaneous heat—permits regulation and reduces spoilage to a minimum. Use gas wherever heat is required.

Keeping Pace With the Progress of Des Moines

Many and continual are the improvements made by the Des Moines Gas Company. As Des Moines grows so does the Gas Company grow. A striking example of this fact is furnished by the new 2,500,000 cubic foot gas holder now under construction. This huge gas tank will further insure a continuous and adequate supply of gas to Des Moines. It will be completed during 1923 at a cost of approximately $300,000.00.

During 1922 we have laid 50,000 feet (about ten miles) of gas mains and have supplied 1,000 new customers. A complete modern boiler plant has been constructed and other new apparatus installed at the gas works.

Des Moines Gas Company

JANSEN HAINES, President — C. M. BENEDICT, Vice-President—Treasurer

BOARD OF DIRECTORS

R. F. Kauffman, Ralph M. Plumb, Alexander Fitzburgh, J. H. Burrows, William Koch, Jansen Haines, C. M. Benedict, Lewis Lillis, P. H. Gadsden, J. T. Hutchings

Associations Affiliated with A. G. A.

Canadian Gas Association
Date of Affiliation—Mar. 25, 1919
Pres.—Col. D. R. Street, Ottawa Gas Co., Ottawa, Ont., Can.
Acting Sec.-Tr.—E. A. Hills, Consumers' Gas Co., Toronto.
Conv., 1923.

Empire State Gas and Electric Association
Date of Affiliation—Nov. 21, 1919
Pres.—M. J. Brayton, Utica Gas & Electric Co., Utica, N. Y.
Sec.—C. H. B. Chapin, Grand Central Terminal, New York, N. Y.
Conv., 1923.

Illinois Gas Association
Date of Affiliation—Mar. 19, 1919
Pres.—R. S. Wallace, Central Illinois Light Co., Peoria, Ill.
Sec.-Tr.—R. V. Prather, 305 Illinois Mine Workers Bldg., Springfield, Ill.
Conv., Sherman Hotel, Chicago, Ill., March 14, 15, 1923.

Indiana Gas Association
Date of Affiliation—April 24, 1919
Pres.—F. B. Tracy, Central Indiana Gas Co., Muncie, Ind.
Sec.-Tr.—E. J. Burke, Citizens Gas Co., Indianapolis, Ind.
Conv., West Baden Springs Hotel, West Baden, Ind., May 7, 8, 1923.

Iowa District Gas Association
Date of Affiliation—May 21, 1919
Pres.—H. B. Maynard, Citizens Gas & Electric Co., Waterloo, Ia.
Sec.-Tr.—H. R. Sterrett, Des Moines Gas Co., Des Moines, Ia.
Conv., Hanford Hotel, Mason City, April 18, 19, 20, 1923.

Michigan Gas Association
Date of Affiliation—Sept. 18, 1919
Pres.—Fred W. Seymour, Battle Creek Gas Co., Battle Creek, Mich.
Sec.-Tr.—A. G. Schroeder, Grand Rapids Gas Light Co., Grand Rapids, Mich.
Conv., 1923.

Missouri Association of Public Utilities
Date of Affiliation—June 18, 1920
Pres.—E. R. Locke, Missouri Utilities Co., Mexico, Missouri.
Sec.-Tr.—F. D. Beardslee, 315 N. 12th St., St. Louis, Mo.
Wiley F. Corl, Chmm. Affiliation Com., Missouri Utilities Co., Mexico, Mo.
Conv., 1923.

New England Association of Gas Engineers
Date of Affiliation—Feb. 19, 1919
Pres.—C. E. Paige, C. H. Tenney & Co., Boston, Mass.
Sec.-Tr.—J. L. Tudbury, Salem Gas Light Co., Salem, Mass.
Conv., Boston, 1923.

Gas Sales Association of New England
Date of Affiliation—Oct. 1, 1919
Gov.—F. A. Woodhead, Arlington Gas Light Co., Arlington, Mass.
Sec.—M. Bernard Webber, 150 Congress St., Boston, Mass.
Annual Meeting, 1923.

New Jersey Gas Association
Date of Affiliation—April 25, 1919
Pres.—Jacob B. Jones, Bridgeton Gas Light Co., Bridgeton, N. J.
Sec.-Tr.—H. E. Mason, Consolidated Gas Co. of N. J., Long Branch, N. J.
Conv., 1923.

Pacific Coast Gas Association
Date of Affiliation—Sept. 18, 1919
Pres.—F. S. Wade, Southern Counties Gas Co., Los Angeles, Cal.
Sec.-Tr.—W. M. Henderson, 812 Howard St., San Francisco, Cal.
Conv., 1923.

Pennsylvania Gas Association
Date of Affiliation—April 10, 1919
Pres.—Luther Gaston, Lebanon Gas & Fuel Co., Lebanon, Pa.
Sec.-Tr.—Geo. L. Cullen, Harrisburg Gas Co., Harrisburg, Pa.
Conv., 1923.

South Central Gas Association
Date of Affiliation—Oct. 15, 1919
Pres.—F. C. Armbruster, Southwestern Gas & Electric Co., Shreveport, La.
Sec.-Tr.—S. J. Ballinger, San Antonio Public Service Co., San Antonio, Texas.
Conv., 1923.

Southern Gas Association
Date of Affiliation—May 20, 1919
Pres.-P. H. Gadsden, The United Gas Improvement Co., Philadelphia, Pa.
Sec.-Tr.—G. H. Smith, City Gas Co., Norfolk, Va.
Conv., St. Petersburg, Fla., April 16-18, 1923.

Wisconsin Utilities Association
Pres.—J. P. Pulliam, Wisconsin Public Service Co., Milwaukee, Wis.
Exec.-Sec.—J. N. Cadby, 445 Washington Bldg., Madison, Wis.
Conv., Hotel Pfister, Milwaukee, Wis., March 22, 23, 1923.

MANUFACTURERS SECTION

F. A. LEMKE, Chairman — G. W. PARKER, Vice-Chairman

C. W. BERGHORN, Jr., Secretary

MANAGING COMMITTEE—1923

At Large

BAILEY, JR., E. P., Cleveland, Ohio
COLLINS, D. J., Philadelphia, Pa.
CRANE, WM. M., New York, N. Y.
DE HART, JR., J. S., Newark, N. J.
DICKEY, E. S., Baltimore, Md.
GREENE, J. J., New York, N. Y.
KNAPP, F. H., Pittsburgh, Pa.
MAXON, H. R., Muncie, Ind.
MCDONALD, DONALD, New York, N. Y.
NORMAN, E. A., New York, N. Y.
ROBERTS, EARL W., Detroit, Mich.
SIMLER, O. P., Lorain, Ohio
STITES, TOWNSEND, Gloucester, N. J.
TAPPAN, W. H., Mansfield, Ohio.

Representing Affiliated Societies

ABBOTT, M. E., Taunton, Mass. (Gas Sales of N. E.)
BARTLETT, C. E., Philadelphia, Pa. (New Jersey)
BARTLETT, C. E., Philadelphia, Pa. (Pennsylvania)
CREVISTON, A. E., Baltimore, Md. (Southern)
GIBSON, W. R., Toronto, Ont., Can. (Canadian)
HAMMOND, E. W., San Francisco, Cal. (Pacific Coast)
MCCULLOCH, CHARLES, Milwaukee, Wisc. (Wisconsin)
NORTON, ARTHUR E., Boston, Mass. (N. E. Gas Eng.)
PARKER, JOHN F., Rockford, Ill. (Indiana)
ROPER, GEO. D., Rockford, Ill. (Illinois)
ROPER, GEO. D., Rockford, Ill. (Iowa)
SEIDENGLANZ, C. H., Dallas, Texas (South Central)
SMITH, W. L., Battle Creek, Mich. (Michigan)

CHAIRMEN OF SECTION COMMITTEES ORGANIZED TO DATE

Exhibition—F. A. LEMKE, Kalamazoo, Mich.
Nominating—J. S. DEHART, JR., Newark, N. J.
Division of Accessories Manufacturers—EARL W. ROBERTS, Detroit, Mich.
Division of Apparatus & Works Manufacturers—D. J. COLLINS, Philadelphia, Pa.
Division of Gas Range Manufacturers—W. H. TAPPAN, Mansfield, Ohio.
Division of Heating Appliance Manufacturers—E. P. BAILEY, JR., Cleveland, Ohio.
Division of Industrial Appliance Manufacturers—H. R. MAXON, Muncie, Ind.
Division of Lighting Appliance Manufacturers—TOWNSEND STITES, Gloucester, N. J.
Division of Meter Manufacturers—DONALD MCDONALD, New York, N. Y.
Division of Office Labor Saving Devices—E. A. NORMAN, New York, N. Y.
Division of Water Heater Manufacturers—O. P. SIMLER, Lorain, Ohio.
Division of Supply Manufacturers—J. J. GREENE, New York, N. Y.

Bureau of Standards Exhibit at American Gas Association Convention

THE American Gas Association requested the Gas Engineering Section of the Bureau of Standards to prepare an exhibit for the convention at Atlantic City in October. The Association supplied the exhibit space of 14 feet by 15 feet and freely assisted in every possible manner in supplying materials and assembling of exhibits. The Association also selected the exhibit space, which was very prominently located.

Complaints of service from gas appliances are largely the result of improperly designed burners. Part of the bureau exhibit was prepared with the main object of showing how to properly design burners. Two pipe burners of the same size, connected to the same manifold, consuming the same amount of gas and differing only in the design of the injecting tube illustrated the importance of proper design. The air shutter of each burner was wide open. Irrespective of the gas pressure the burner with the *improved* injecting tube gave the right kind of flame, while the flame of the unimproved burner was yellow at all pressures. The exhibit was very effective.

Next to this exhibit was an injecting

tube cut in section above which was a descriptive drawing "How to Design a Burner with Improved Injecting Tube." The form in which this drawing was prepared made the problem of burner design readily understood. About eighty requests were received for copies of the drawing, which is reproduced herewith.

Various designs of so-called "gas-saving" devices are being sold throughout the United States. All of these "gas-savers" which the Bureau has tested have caused carbon monoxide to be liberated with the products of combustion in quantities that are extremely dangerous to health. Four different designs were exhibited.

The burner testing apparatus developed by the Bureau to measure the primary air injected into a burner was also exhibited. By the use of this apparatus it has been possible to secure a much clearer insight into the principles of burner design and conditions of operation of burners. Many demonstrations were made for those not familiar with the apparatus. This part of the exhibit attracted much interest.

Bureau publications relating to gas were on display and the necessary information for securing copies was given to those interested. About eighty persons expressed particular interest in publications concerning design of burners and efficient utilization of gas and they have been supplied with all the Bureau publications on these subjects.

Two different photographs of the exhibit are reproduced herewith.

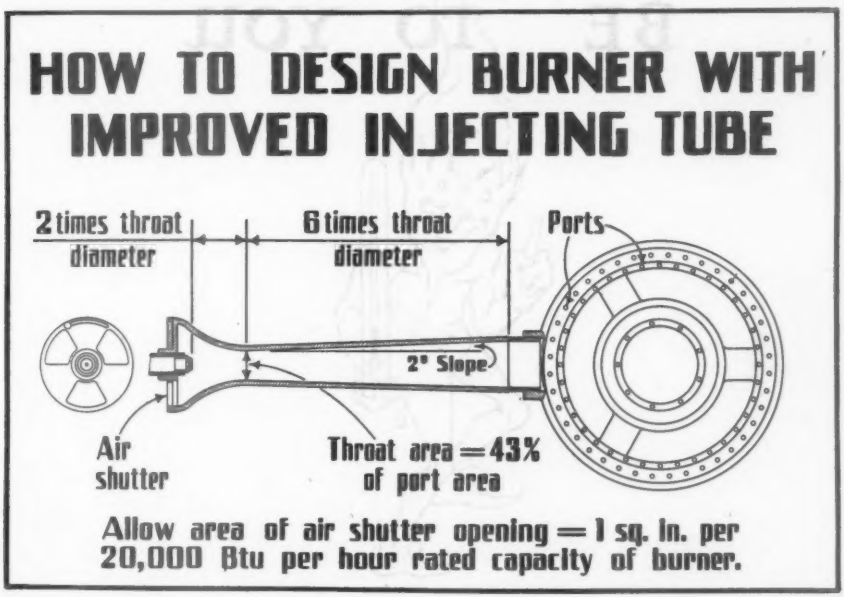
Example of Application of Bureau Information

The Bureau representatives were told by an official of a large appliance company that their trade is demanding improved appliances. They have recently completely redesigned all the burners of their various appliances according to the

recommendations contained in Bureau of Standards Technologic Paper 193, Design of Atmospheric Gas Burners. In the descriptive literature of one of their redesigned gas stoves they say, "This burner is a decided departure from types of burners usually used in stoves of this kind; it is constructed in keeping with the most recent specifications of the U. S. Bureau of Standards."

Results of Exhibit

The eagerness of appliance manufacturers and fuel engineers for information on how to design burners and their desire to discuss utilization problems consumed practically all of the time of the Bureau's representatives throughout the five days of the convention. They were only able to observe carefully a few appliance exhibits. In several cases where improper design was apparent, the information of this Bureau was offered. It was not generally known that the Bureau had done so much work concerning these problems. The exhibit should result in closer relations of the Bureau with manufacturers and gas engineers and should react to produce a general improvement in appliances, thereby bringing about better service conditions.


HOW TO DESIGN BURNER WITH IMPROVED INJECTING TUBE
2 times throat diameter
6 times throat diameter
Ports
2° Slope
Air shutter
Throat area = 43% of port area
Allow area of air shutter opening = 1 sq. in. per 20,000 Btu per hour rated capacity of burner.

Tennessee Adopts Uniform Classification of Accounts

The Railroad and Public Utilities Commission of Tennessee has adopted the Uniform Classification of Accounts, recommended by the National Association of Railway and Utilities Commissioners, effective Jan. 1, 1923.

The STORY of what a B. T. U. should BE TO YOU

COMING!

COMMERCIAL SECTION

WILLIAM GOULD, Chairman — J. E. DAVIES, Vice-Chairman

LOUIS STOTZ, Secretary

MANAGING COMMITTEE—1923

At Large

BARNES, CYRUS, Boston, Mass.
BARTLETT, C. E., Philadelphia, Pa.
COLLIER, WILLIAM, Poughkeepsie, N. Y.
DUTTON, L. R., Jenkintown, Pa.
EVES, PHILMER, New Haven, Conn.
HANLAN, J. P., Newark, N. J.
HUMPHREY, H. E., New York, N. Y.
JONES, J. B., Bridgeton, N. J.
KAHN, B. B., Hamilton, Ohio
KNAPP, F. H., Pittsburgh, Pa.
MACSWEENEY, J. P., Rochester, N. Y.
MILENER, E. D., Baltimore, Md.
MURRAY, J. J., Biddeford, Me.
MYERS, J. B., Philadelphia, Pa.
NEWMAN, H. H., Trenton, N. J.
POLLITT, L. I., Baltimore, Md.
POST, A. P., Philadelphia, Pa.
QUINN, J. J., Quincy, Mass.
RASCH, W. T., New York, N. Y.
SMITH, D. R., Baltimore, Md.
STANNARD, C. N., Denver, Col.
STEPHANY, E. J., Pittsburgh, Pa.
STETSER, J. R., Gloucester, N. J.
TAYLOR, J. D., Baltimore, Md.

Representing Affiliated Societies

BURKE, E. J., Indianapolis, Ind. (Indiana)
CORL, W. F., Mexico, Mo. (Missouri)
CRAFTS, H. C., Pittsfield, Mass. (N. E. Gas Eng)
CRANKSHAW, J. W., Allentown, Pa. (Pennsylvania)
CRAWFORD, H. M., San Francisco, Cal. (Pacific Coast)
DOERING, H. A., Mt. Vernon, N. Y. (Empire State G. & E.)
FLAUTT, J. J., New Orleans, La. (South Central)
GOSS, A. J., Ottumwa, Ia. (Iowa)
HANLAN, J. P., Newark, N. J. (New Jersey)
JOHNSON, W. B., Toronto, Can. (Canadian)
LEARNED, J. G., Chicago, Ill. (Illinois)
MCDONNOLD, H. E., Greenville, S. C. (Southern)
QUINN, JOHN J., Quincy, Mass. (Gas Sales of N. E.)
SCHROEDER, A. G., Grand Rapids, Mich. (Michigan)
ST. JOHN, JOHN, Madison, Wis. (Wisconsin)

CHAIRMEN OF SECTION COMMITTEES ORGANIZED TO DATE

Cooperation with Architects and Builders— R. S. DOULL, New York, N. Y.

Cooperation with the Plumber and Heating Dealer— F. H. KNAPP, Pittsburgh, Pa.

Home Economics Service Bureau—PHILMER EVES, New Haven, Ct.

Industrial Gas—E. J. STEPHANY, Pittsburgh, Pa.

Retail Pricing—A. P. POST, Philadelphia, Pa.

Sales Stimulation—J. E. DAVIES, Chicago, Ill.

Announcement of Sales Stimulation Committee Plans for April--May--June

On or about March 1st, the Commercial Section, through its Sales Stimulation Committee, will issue a Special Bulletin giving in complete detail suggestions for a special effort on Gas Water Heating.

The water heating field presents wonderful possibilities for building up gas sales per meter, and our member companies are invited to participate in a nation-wide campaign to sell the public on the advantages of gas service in connection with automatic water heating.

The plan recommends that, so far as feasible, all member companies arrange to conduct their water heater sales' activities during the months of April, May and June and longer, if possible.

A copy of the Special Bulletin, when released, will be sent to each member company—copies will also be available to individual members on request.

LET'S SELL THE PUBLIC THE IDEA OF GAS WATER HEATING.

Campaigning Incandescent Gas Lights

W. F. O'DONNELL

THAT the public is still greatly interested in modern gas lighting and glad to have the latest refinements in gas illumination brought to its attention has been abundantly proved by campaigns recently concluded or at present under way. In many cities the lighting end of the business was somewhat neglected during and following the world war. Just what effect this condition might have upon the future of the business has been problematical. Many gas companies have realized that some intensive effort would have to be made to correct conditions and resume a forward swing. The manufacturer was just as much interested as the gas companies, and the superintendent of retail sales for one company, determined to devote his chief effort this season to campaigns and let everything else become auxiliary. He began his operations in Pennsylvania and New Jersey. Here the necessary experience was acquired and the methods perfected. Now any gas company can have its campaign and will receive co-operation from the nearest branch of this company.

Campaigns have thus far been conducted in Philadelphia, Reading, Allentown, Harrisburg, Norristown and West Chester in Pennsylvania; Baltimore, Md.; Troy, N. Y., and Newark, Camden, Burlington and other cities in New Jersey. Campaigns are now under way in Syracuse, Binghamton and Rochester, N. Y. Also in Charlestown, Salem, Arlington and Quincy, Mass., and in Concord and Nashua, N. H.

Two lights were chosen for the purpose, a semi-indirect fixture and an upright single unit.

"What a Beautiful Lighting Fixture!"
"Where can I get it? What will it cost? How will it look in my dining room,—living room? Is it the best light for my home?"
Our salesman is going to call on you to answer every question you want to ask about the new Welsbach Campaign Semi-Indirect Gas Fixture—the No. 1600 Fixture (with No. 1548 Bowl). He will explain this new delightful method of home lighting so free from glare and dark shadows—just restful radiance everywhere.
Our Special Offer Is—
Only $2.00 Down
And the balance in easy monthly payments extending over several months. Don't miss this unusual opportunity.
Mail this Coupon and we will install the light.
Gentlemen:
Install one of the lights as advertised for which I agree to pay $2.00 down and $2.00 per month.
Signed.....
Syracuse Lighting Company

Campaigns Require Specialists.

The plan adopted was for the manufacturer company to supply the lights at a given price, provide the selling force and take care of all the details until the light was installed and a first payment made by the purchaser. Then the balance of the account was to be collected by the gas company. So far as the public was concerned, the campaign was conducted by the gas company; its imprint appeared on the advertising matter and printed forms, and the salesmen in approaching customers would introduce themselves as representing the gas company. Why, then, should the manufacturer appear in the matter at all?

50c Down and Term Payments
The best artificial light to be had at any price is now within the reach of all
Years of experiment, research and constant improvement by the experts of the Welsbach Company have resulted in this lighting marvel—No. 7104 Welsbach Gas Light.
Features of Superiority:
(1) Improved adjustable Bunsen burner reduces amount of gas used, but increases speed of its flow, resulting in brilliant illumination. (2) Welsbach "Reflex" upright mantle, which gives long service without deteriorating. (3) Dependable self-lighting attachment, which works by a gentle pull of a chain, and, when the light is not in use, supplies a tiny glow that leads you to the fixture in the darkest room. (4) Beautiful flowered shade of finest glassware, designed to harmonize with the most decorative and tasteful surroundings. (5) A graceful light which harmonizes with the lines of the fixture.
No. 7104
WELSBACH GAS LIGHT
A complete modern light in every respect. Installed on your ceiling or side-wall fixture ready to light on these special easy terms
$5. DOWN AND $5. A MONTH FOR 4 MONTHS
$25.00 in all. (Without self-lighter, $22)
Begin to Brighten Up Today:
For the convenience of our consumers, we are, without extra charge, demonstrating this light in the homes. Or, if preferred, you may see it at any of our stores.
THE UNITED GAS IMPROVEMENT COMPANY

Simply because campaigning is a specialized form of sales effort. In order to put the necessary ginger into a campaign, the salesmen must have only the one thing in their minds; they must be trained for the job; they must work under expert supervisors; and if they have had experience in other situations which they can adapt to the present needs, so much the better. If a gas company were to have its own campaign force it would be a question of building up and training a crew, dismissing it after a campaign, and then going through the whole process again for the next campaign. The manufacturer company, on the other hand, can keep the same force of men busy all the time by sending them from one city to another as required and thus is constantly strengthening its organization.

Salesmen obtained through newspaper advertisements were given a thorough training before going out on their work. This instruction started at the burner. The fact was stressed that a free flow of gas is necessary to get results with a light, and the men were shown how to remove obstructions at the gas outlet. Then the improved principle of the latest burners was explained so that the salesman could demonstrate to the housewife how these burners provide high lighting efficiency with remarkable saving of gas. Then the construction of the mantle was gone into in detail, not only to show the long-lasting quality of the mantles, but to make clear the importance of careful handling of a mantle in installing it. Next followed information about the self-lighting attachment and glassware, and finally, training in the installation and adjustment of lights.

Salesmen Make Good Pay

Some difficulty was encountered in getting good campaign salesmen. About 50 per cent of the men, after accepting positions and finishing instruction in selling and installing lights, failed to show up the next morning, and some others were eliminated quickly after they had tried to do actual selling. Those who remained were found to be unusually good men for the purpose. The best of all were men who had occupied shop or clerical positions and who took on this work in order to get in the air. One man, who had been a grocery clerk, went into the work with such vim that he was soon making about $100 a week in commissions. Others did nearly as well.

In the case of the single light, the men were supplied with containers, similar to suit-cases but opening at the top, each of which held 18 lights complete with glassware. With these cases the men started out in the morning in crews of eight with a supervisor to each group. The plan was for two men to take a city block and work towards each other so that no house should be missed. Should a salesman need more lights, he could telephone in to headquarters and have them sent promptly by special messenger. Should he require help in closing a difficult sale, he could always find the supervisor close at hand.

The method of approach was for the salesman to hold up the sample light when the door was opened and begin to talk about it at once, explaining that he was sent by the gas company to demonstrate this new light and aid in improving lighting conditions in the homes. After having created the desired interest, he would look for a suitable bracket or ceiling outlet, quickly install a light upon it, burn off a mantle and demonstrate its merits. Then came the closing talk, namely, that the light would be left there for a first payment of 50 cents followed by four further payments of 50 cents a month.

In the case of the semi-indirect light the procedure was, of course, somewhat different. Here the man would carry only one light and could not install and demonstrate it as he could with the smaller unit. The terms on the semi-indirect light were somewhat different in different towns, but in most cases they were $2 down and $2 a month for ten months. After having obtained the order and the first payment, the salesmen would get in touch with the wagon or truck which accompanied each crew and fitters would take a fixture from the vehicle and connect it at once.

Friendly Feelings Encountered

And now we come to the point where the lighting fight is actually carried into the home. What did the salesman find when he entered a home? An enemy confronting him menacingly? Not at all. On the contrary, a somewhat neglected friend receiving him gratefully. Here a gas bracket surmounted by a piece of broken glassware and a burner and mantle sadly out of commission. There a ceiling fixture with shade askew and some lights operating after a fashion while others had long gone out of use. And if these lighting units could speak, they would seem to say to the salesman: "We have been here for a long time, patiently and loyally trying to uphold the reputation of gas lighting, but the odds have been against us. With a little attention this room will again glow with the cheer of perfect illumination and gas will again be the friend of the people who live in this house."

Quite different, you will note, from the attitude of those persons who would tell you that gas lighting is done for. A welcome, you will agree, which should hearten and embolden us in striving to hold on to a part of our business which in the average city amounts to perhaps 20 per cent of the entire gas output.

The usual method has been to clean up a town on the single light before beginning the campaign for the semi-indirect light. Where the small light was sold the number placed in a house ranged from one to ten. But even one light operating efficiently was the best kind of a silent advocate for the salesman who later on approached that housewife with the proposition of placing a beautiful

semi-indirect in the living-room or dining-room. These later sales were made with surprising ease.

In Philadelphia, 34 salesmen spent nearly four months in canvassing and partly re-canvassing the city, and in that time the sales of the upright units, including those sold in the stores and by the regular salesmen of the gas company, amounted to 45,000. In the other cities where the campaign was conducted, the proportion of sales to the number of meters in use, ran about the same as in Philadelphia. In all, thus far, since last September this manufacturer has put out 90,000 upright lights through campaign crews.

While the campaigning of semi-indirect lights has not been in operation very long, excellent results are reported, notably in Baltimore, where over 2,000 of these lights were sold in two months. A semi-indirect campaign is now under way in Philadelphia.

Campaigns Run for Profit

In conducting these campaigns the gas company, of course, incidentally expects to make a small profit. There is no question of doing this if the payments can be collected promptly. In cases where the deferred payments are added to the gas bill, the matter of collection is simple. Where this is not done and collectors have to call at the homes, the collection expense eats into the profit on the sales. But entirely aside from the question of profit on the individual sale, the campaign is bound to be successful. Any losses that might be incurred should be charged up as a contribution towards the larger objective to be gained. First of all, the campaign is helping us to preserve one of the most important branches of our business, the lighting end, which, as stated before, amounts to nearly 20 per cent of the entire consumption in many cities. If any other line of business were in danger of losing such big revenue, it would go to any extremes to keep it. We should do the same. There is no logical argument against incandescent gas lighting. The well known points in its favor, its safety, quality, economy, attractiveness, etc., are as true now as they ever were. But they are true only of good lights which are in good condition. So that, no matter what we do in the way of publicity or selling talk, we are at a disadvantage so long as the lights in the homes are not bearing out our statements. The campaign makes it possible for us to get into the homes and place the lights in such condition that we need fear no inroads on our lighting business for some time thereafter.

Then there is the good will engendered by having a home properly gas lighted. The very nature of light makes it preeminently of advertising value. The gas range in the kitchen, the water heater in the cellar, may perform their duties ever so efficiently, but make no appeal beyond their utility. But a beautiful light appeals to the imagination and the senses in a special way. It is a constant reminder of the service back of it. The home which is lighted properly by gas is a home in which everyone must think of the gas company as a friend. So, viewed in its larger aspect, it would seem that carrying the lighting fight into the homes through the medium of campaigns is decidedly a worth-while undertaking.

Industrial Gas Committee Meets

PERHAPS the most important matters discussed at the meeting of the Industrial Gas Committee held in Pittsburgh on January 16th, were those of the formation of an industrial section of the Association and the general plans for the coming convention.

The committee were unanimously in favor of the formation of an industrial section on the grounds that the industrial man is concerned primarily with large volume gas sales and that this branch of the industry should, therefore, deserve a wider consideration than is possible under the existing arrangement. The committee, therefore, is to take the necessary steps in preparing a petition for the establishment of such a section to be presented to the entire membership for vote.

It was also decided during the coming year to revise "1000 Uses for Gas" and to prepare a series of six booklets in loose leaf form under the following titles:

Wholesale Baking
Steam Boilers
Large Volume Water Heating
Hotel and Restaurant Uses
House Heating
Combustion

It is planned, predicated on separate industrial meetings at the coming convention, to discuss all of these six booklets and in addition, to present a paper, "The Importance to Gas Companies of the Sale of Industrial Gas," before a general session. An additional paper is to be prepared, a composite paper, by the manufacturers of industrial appliances which will give data on these appliances as well as data on future development.

Illuminating Engineering Nomenclature

Members of the Association are requested to send criticisms and suggestions on the subject of Illuminating Engineering Nomenclature and Photometric Standards to the Illuminating Engineering Society, 29 West 39th Street, New York, N. Y. This was made an American Standard by action of the American Engineering Standards Committee on July 11th, 1922, and a pamphlet covering this Standard may be obtained by application to the office of the Illuminating Engineering Society.

As sponsor for the undertaking, the Illuminating Engineering Society is engaged in a revision of this Standard, and an account of the proposed changes may be found in the report of the Committee on Nomenclature and Standards, published in the Transactions of the Illuminating Engineering Society for January, 1923.

The Committee which is now engaged in the revision of this Standard will be glad to receive any suggestions or criticisms.

W. J. SERRILL,
Representative of A. G. A. on the Sectional Committee for this Standard of the A. E. S. C.

Annealing Steel Castings with Gas

C. E. MUCHBERG, Industrial Engineer, Denver Gas & Electric Light Company, Denver, Colo.

THE Denver Gas & Electric Light Co. recently started an intensive industrial gas campaign which has been conducive of some very surprising results. As an example may be cited the conversion to gas of two car-type annealing furnaces at the Queen City Foundry, a shop producing the highest grade steel and iron castings for general railroad use.

The smaller furnace has an approximate capacity of three tons of castings per charge and the larger furnace has sufficient capacity to handle as high as twelve tons per charge. Both furnaces were direct fired from one side, with wall flues on both sides, but the larger furnace was of better design and in better repair. Had it been possible to redesign these furnaces and insulate them, greater economies could have been obtained than was the case.

In making the conversion to gas fuel, a four-inch supply line was installed with a dash pot regulator to maintain a uniform pressure of twenty inches water column. The smaller furnace was equipped with two blast burners of the air-injector type and the larger furnace was equipped with four of these burners, all being inserted in the old oil burner ports. Separate motor driven blowers were installed to furnish the required blast air and each furnace was equipped with two thermo-couples, one placed in the front and one in the rear.

Previous to the installation of the gas burners, a test was conducted on the old oil burner equipment to determine the oil consumption per ton of the different grades of steel castings annealed, temperatures and time being also recorded. Similar tests were made after the conversion to gas, analyses by the Orsat Apparatus being made to insure the most perfect combustion conditions. The average results of these tests are shown in the accompanying table. The great difference in time between manganese steel and medium and low carbon castings being due to the necessity of bringing the former to temperature much more slowly than in the case of the latter.

From the results obtained, it can readily be seen that gaseous fuel, when correctly applied, has a wonderful advantage over oil. Likewise, by means of correct application, economies may be effected which will make the use of gas thoroughly competitive with oil from a general cost standpoint without consideration of the many other characteristics which tend to make gas the more desirable fuel.

Average Results Obtained

	Large Furnace		Small Furnace	
Fuel	Gas	Oil	Gas	Oil
Material	Medium Carbon	Medium Carbon	Manganese Steel	Manganese Steel
Final Temp.	1550° F.	1550° F.	1950° F.	1950° F.
Total Time	10 hr. 50 min.	10 hr. 30 min.	12 hr. 25 min.	14 hr. 15 min.
Tons	8.6	7.7	2.6	3.0
Max. Hourly Demand B.t.u.	1,802,000		1,105,000	
B.t.u./ton	1,872,090	4,060,000	3,300,000	6,762,000

Conversion Ratio: $\frac{\text{B.t.u. of Gas}}{\text{B.t.u. of Oil}}$ = Med. Carbon Steel 1:2.14 Mangan. Steel 1:2.04

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The Application of Graphics to Gas Mixtures

E. J. BRADY, Manager Physical Laboratory, United Gas Improvement Co.

SEVERAL years ago the writer made use of a new application of trilinear coordinate paper to enable one to tell at a glance both the heating value and the specific gravity of any mixture whatsoever of three given constituent gases. This method proved to be of such utility and simplicity in the laboratory that a brief description of it appeared in the Journal of the Franklin Institute (page 280, February, 1918). A description of the application to gas mixtures which up to that time appears to have been overlooked is as follows:

In a mixture of three gases the heating value of the mixture is equal to the sum of the products of the percentage of each constituent multiplied by its respective heating value. This is also true of specific gravity, and very nearly true for the amount of air necessary for complete combustion.

It follows from the above, that if on each of the three corners of a "gas mixture triangle" we erect lines perpendicular to the plane of the paper, proportional to the heating value of the constituent at that corner, the upper ends of

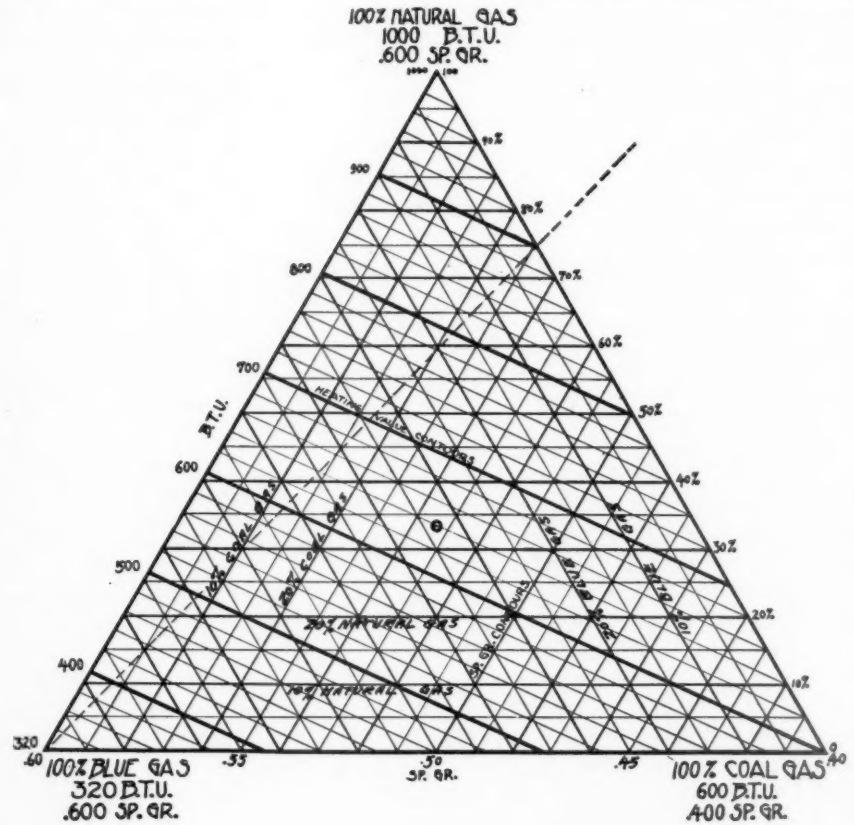
these lines will determine a plane. This plane, which we may call the heating value plane, will, in general make an angle with the plane of the paper. Contours, or lines of equal heating value, drawn upon this plane will be straight parallel lines, making angles with the sides of the triangle, depending upon the heating value of the particular gases mixed. Such lines are the loci of an infinite number of mixtures of the three gases represented, all having the same heating value.

Similar systems may be drawn for specific gravity and air required for complete combustion.

The latter system is not shown in the figure but its lines will, in general, be almost parallel with the heating value contours, because of the fact that heating value is roughly proportional to the number of O_2 atoms required for complete combustion.

Specific gravity contours or lines of equal gravity generally cross the heating value lines at certain angles. It is thus possible to eliminate one of these variables from experiments on gas mixtures.

Travelling along one of the gravity contours gives a whole series of mixtures of different heating values but of constant gravity, and similarly, travelling



along one of the heating value contours gives a whole series of mixtures of different specific gravity but of constant heating value.

These lines are all straight because of the linear relation between the particular characteristics so chosen, viz., heating value, gravity, etc., and the quantity of gas involved.

However, other characteristics of the mixture may also be represented, such as velocity of inflammation by curved lines, if the experimental data are at hand.

The "gas mixture triangle" is not limited to pure gases. We may determine the characteristics of such gases as coal gas, water gas, and oil gas in the ordinary way, using these values to construct a triangle, and proceed as above. The quality of a mixture as to gravity and heating value may be decided upon and its position on the diagram located at a point. A circle drawn with the point as a center will establish a tolerance outside of which the characteristics of the mixture must not fall.

A set of curves for the same purpose appeared in the November issue of the American Gas Association Monthly, and in view of the importance of being able to quickly determine both the heating value and the specific gravity of the mixture consisting of the three constituents, natural gas, blue gas, and coal gas, as described in that article wherein the curves prepared by the Bureau of Mines, Pittsburgh, were used in Buffalo, N. Y., the writer has had prepared the same information on trilinear coordinate paper with the thought that this method might also be of some little use to gas engineers in view of the fact that the necessity for mixing natural gas with manufactured gas is on the increase.

The chart, as will be seen, is comparatively simple to prepare and easily read, all of the lines being straight lines. One great advantage is that owing to this simplicity of preparation a new chart may be made for another set of constituents very readily, in so far as heating value and specific gravity is concerned, as the trilinear coordinate paper may be purchased on the market.

Each corner represents 100% of the particular constituent. The percentage lines are all parallel with the sides. It so happens that with the particular values for specific gravity chosen, the specific gravity contours coincide with the percentage lines representing the various percentages of coal gas. This is a coincidence. If the specific gravity of blue gas had been taken as .55, all of the other values remaining the same, the .55 specific gravity contour would have made an angle with the percentage lines as shown by a dotted line through the chart. All of the other gravity lines would have been parallel with this one.

It will be noted that the gravity and heating value of mixtures of two of the constituents may also be read on the respective sides of the triangle. For example: a mixture of natural gas and blue gas having a heating value of 600 would be composed of approximately 41% natural gas and 59% blue gas. Also, if we were to make a mixture composed of 33⅓% of each of these constituents, this mixture would be represented by the dot in the center of the triangle. The heating value of this mixture, according to the scale on the left, would be 640 B.t.u.'s and the specific gravity, according to the scale on the bottom, would be approximately .534. The chart is most easily prepared as follows:

It will be noted, for example, that the

heating value of the coal gas represented by the lower right hand corner falls somewhere between the heating value of natural gas and the heating value of blue gas. The side of the triangle connecting the natural gas with the blue gas should, figuratively speaking, be divided into 680 parts (1000 – 320), although the actual division into such parts is unnecessary. The 600 B.t.u. contour will then pass through the coal gas corner, as we have assumed that the coal gas is 600 B.t.u., and through a point on the natural gas, blue gas side of the triangle 400/680 from the natural gas corner. A slide rule will give this fraction as 59% of the distance from natural gas to blue gas. All of the other heating value contours will be parallel to this one and of course should be suitably spaced.

An exactly similar method may be used in determining the specific gravity contours. To read the percentage of any constituent always begin by counting percentage lines from the side opposite to the particular constituent. For example: what percentages of the three constituents will give a gas having a heating value of 500 and a specific gravity of .57? These two lines intersect at a point indicating 15% of coal gas, 20% of natural gas, and 65% of blue gas as being the proper mixture.

All of the lettering shown on the chart is, of course, not necessary after one becomes familiar with its use.

Survey of Laboratory Facilities

The Association published, January 15, a Survey of Laboratories in the United States equipped for research on problems of general interest to the gas industry. This survey was compiled by the Chemical Committee up to June, 1922, and includes an alphabetical list of laboratories, giving name and address of company, address of laboratory, kind of laboratory, director and staff, and special equipment listed. A classification of laboratories is also given according to the routine tests or research work they are equipped to handle, and also according to gas company, government bureau, university, and laboratories of consulting chemists and industrial companies.

This information is of interest to all company members and particularly so to those requiring the services of outside laboratories. Copies can be obtained on application to Association Headquarters.

Fall River Gas Plant

A. C. KLEIN of Stone & Webster, Inc.

IN the carburetted water gas plant which was designed and constructed for the Fall River (Mass.) Gas Works Company by Stone & Webster, Inc., in 1922, an attempt has been made to anticipate the gas making conditions which may be expected within the next decade, particularly with respect to the supply of enriching oil. The association's gas oil committee in its 1920 report clearly pointed out that gas companies could not long continue to purchase oil of "pre-war quality," except at a prohibitive cost. This conclusion was reiterated and emphasized by the secretary of the American Petroleum Institute in an address before the general session of the Association at the same convention. Although the industrial depression of the past two years has delayed the full effect of the economic factors set forth in the committee's report, it should be borne in mind that their action is merely being delayed and that a renewal of industrial activity may at any time result in a sudden shortage of high grade gas oil.

Two of the important factors which are largely responsible for the decreasing gas oil supply are the gasolene requirements of automobiles and the bunker fuel requirements of the navy and merchant marine. It is a fact worthy of more than passing notice that these classes of oil consumers have steadily increased their demands since 1920, in spite of the fact that the intervening period has been one of industrial depression. A return of prosperity to our industries may, therefore, easily result in a gas oil shortage such as that of 1919 and 1920.

The gas industry may well ask itself what sort of enriching oil it may have to handle in the near future. It will be obliged to use those distillates and crudes which can not be economically converted into gasolene. They will be obtained from two principal sources:

1. The residuum from Mid-continent crudes which remains after all of the fractions that can be converted into gasolene have been removed.
2. Topped or untopped crudes of an asphalt base such as the heavy Californian and Mexican oils which are not desirable for use in cracking plants because the gasolene yield is low and the residuum practically unsalable.

These are the oils which are low in gravity, viscous, high in coke, and high in sulphur.

Fixed Sulphur Formation

It has until recently been supposed that coke in a gas enriching oil was only detrimental from a mechanical standpoint and that any process which permitted the removal of the coke before it had accumulated in quantities sufficient to clog the checker brick would be satisfactory. It has been recognized that the carbon deposited on the brick would interact to some extent with the surplus steam carried by the generator blue gases, thereby forming more blue gas, this reaction being similar to that which takes place in the fuel bed of the generator. It has also been found that the use of high sulphur oils would result in a gas having high hydrogen sulphide and high fixed sulphur impurities.

The Stone & Webster heavy oil process is based upon the theory that the

formation of fixed sulphur compounds takes place only in the presence of incandescent carbon. The chemical reactions leading to the formation of carbon disulphide, which forms the bulk of the fixed sulphur, are as follows:

$$S_2+2H_2=2H_2S$$
$$2H_2S+C=CS_2+2H_2$$

In other words, the primary reaction into which sulphur enters results in the formation of hydrogen sulphide. In the presence of incandescent carbon, hydrogen sulphide is reduced, the sulphur combining with the carbon to form carbon disulphide and the hydrogen being set free. In respect to the reactions within the generator, probably the only control that can be exercised is in the selection of generator fuel low in sulphur. All of the other elements which promote the reactions are present and are necessary to water gas reaction. The formation of sulphur compounds in the carburetor appears to be proportionable to the sulphur content of the oil used, apparently reaching an equilibrium when the fixed sulphur is somewhat in excess of 10% of the hydrogen sulphide content of the gas. From this maximum, which is attained only in the presence of an excess of incandescent coke, the quantity of fixed sulphur formed is controllable by controlling the quantity of incandescent carbon in the fixing chambers.

When using a high coke oil, a large part of the coke is deposited on the checker brick. During the run in which it is deposited, the coke is too cool to react with the hydrogen sulphide. If permitted to remain, however, it becomes incandescent during the succeeding blow and on the following run is active in the formation of carbon disulphide. It is, therefore, apparent that the only way to keep the fixed sulphur compounds down is to clean the coke from the carburetor after every run. In this manner the brick is clean at the beginning of each run and the hydrogen sulphide which is formed in the primary sulphur reaction cannot be reduced to carbon disulphide.

The occurrence of these chemical reactions has been determined experimentally by the U. S. Bureau of Mines in connection with its experiments on gas retorts. They are described in a paper entitled "Coal Sulphur and Its Conversion in the Gas Retort" by Alfred A. Powell, and presented before the 1920 convention of the American Gas Association. The agreement between the reactions determined by the Bureau of Mines' experiments and the reactions which take place in the carburetor of a water gas set when using high coke and high sulphur oil, will be apparent to anyone who will carefully study that paper.

As a practical matter, the experimental work carried on at one of the plants under Stone & Webster management in the summer and fall of 1920, has clearly demonstrated the correctness of this theory. Following the experimental work, the plant was operated for a period of six months on a crude Mexican oil containing 15% of coke, 5% of sulphur, and having a specific gravity of from 11-13° Baume, this being, undoubtedly, the poorest grade of enriching oil that has ever been used commercially for gas making purposes. The plant operated for six months exclusively on Mexican crude of the same grade, and during that time produced an average of nearly 1,500,000 cu. ft. of water gas per day. No complaints were received during that time because of sulphur fumes.

Fall River Plant

In the description of the Fall River

plant which follows, an attempt has been made to bring out some of the more important features designed particularly for the manufacture of gas from low gravity, high sulphur oils.

The plant is located on the shore of Mt. Hope Bay, about three miles south of the center of the city of Fall River, Mass. Since 1914, the Fall River Gas Works Company has operated a vertical retort plant on this site and an older water gas plant in the center of the city. The new water gas addition concentrates the manufacturing activities, the old plant being retained as a stand-by and holder station.

Generator House

Acknowledgments

The completed plant embodies the experience of Stone & Webster, Inc., in the construction of heavy fuel oil handling and burning equipment in many steam power plants throughout the country.

Special acknowledgment should also be made to Mr. C. W. Hunter and to Mr. H. Vittinghoff for important contributions in the development of the Stone & Webster heavy oil process and to Mr. Warren D. Stewart and Mr. Vittinghoff for valuable and constructive suggestions in the design of the plant. Patents have been applied for, to cover the important features of the heavy oil process.

Generating Equipment

The generator house is a steel frame building with concrete foundations, brick walls and concrete roof. On all four walls large areas of glass insure unusually good light. The building has been constructed in three heights, the front and highest section contains the water gas generators and overhead coke bunker, the middle section contains the rest of the water gas shells and the rear section the blowers, office and waste heat boiler. The generating equipment consists of two 11 ft. diameter cone top sets, each rated at 3,500,000 cu. ft. per day. Both sets have full hydraulic operation and one has been equipped with an automatic control which has been modified to operate the additional hot valves required when using heavy oil.

The water gas sets embody some features of design which have been worked out especially for handling low gravity, high sulphur oils. The carburetor blast connection has been enlarged to 24" and a meter installed so that the quantity of carburetor air may be measured. The most important modification, however, is the addition of a connection between the top of the generator-carburetor angle connection and the top of the superheater. This connection is 42" in diameter, fire brick lined, and contains a hydraulically operated hot valve. In the

Operating Floor

lower generator connection an additional 24" hot valve has been installed alongside of the regular one, and the hydraulic cylinder of this valve has been interconnected with the extra 42" hot valve so that one valve will always be closed and the other always open.

This connection enables the generator to be isolated from the carburetor so that air may be admitted under the generator grate and to the top of the carburetor at the same time, the generator blast heating the fuel bed while the carburetor air consumes the carbon on the checker brick, thereby heating the brick. The generator gases by-pass the carburetor and superheater and meet the carburetor gases at the superheater stack where they are burned by the excess oxygen in the carburetor blast products. The heat so generated is recovered in the waste heat boiler. Oils of 15% coke content generate sufficient heat to restore the checker brick to the proper gas making temperature. With oils lower in coke content, however, burning the coke deposit may not give sufficient heat and it will be necessary to burn the generator gases in the carburetor for a short time at the end of each blow. All of these operations have been provided for in the design of the automatic control.

Each set has been provided with a turbo-blower, rated at 26,000 cubic feet of air per minute at 42" pressure, when operating at 1800 rev. per min. By increasing the speed, the capacity can be increased to over 30,000 cubic feet of air per minute. The blowers discharge into 36" underground steel mains leading to the sets. A cross connection has been provided so that either blower may, in emergency, furnish blast to the opposite set. The blowers are housed in separate brick rooms in the generator house. One is of the two bearing type, in which the turbine and fan are mounted on a single shaft supported on two large pedestal bearings.

Waste Heat Boiler

While the use of waste heat boilers on water gas sets is becoming more and more frequent, practically all the installations thus far have been of the fire tube type. In a fire tube boiler the gases pass through without being baffled and are then discharged to the stack. In the Fall River plant a water tube boiler has been installed in the expectation that greater transfer of heat would be realized. The boiler is of the cross drum type, set in brick in the usual manner except that it

Ground Floor

has no grates. It is connected to the water gas sets by a 54" fire brick lined and insulated flue.

When operating the waste heat boiler, a stack valve at the boiler outlet is used instead of the regular one. During the gas making period the boiler is subjected to a pressure equal to the back pressure at the top of the superheater, therefore, the entire boiler and setting is steel encased, the casing being designed to withstand the full working pressure of the set.

The boiler design is somewhat unusual, in that the waste gases enter at the top and also leave at the top. An auto-

Waste Heat Boiler

matic feed water regulator with high and low water alarm and a non-return valve in the steam line make the operation practically automatic. Steam soot blowers of the type which are usual in power plant boiler practice have also been installed. They are working so satisfactorily that the boiler has been in use for over two months without any operating or maintenance labor, except the operation of the soot blowers, which requires about ten minutes three or four times a day. After over two months of operation, the outlet gas temperatures range from 425° to 475° F.

The provisions for the use of high coke oil consist of a dust catcher in the waste heat flue at the inlet of the boiler and a special design of the tube headers and tubes which will enable mechanical tube scrapers to be installed in the first pass.

Oil Handling

Oils which are below 20° Baume gravity are almost invariably viscous, the viscosity increasing with reduction in gravity. Many of them are untopped oils, i. e., oils which have not had their gasolene and other light boiling fractions removed. Heat will increase the fluidity of any oil so that it can be handled in pipe lines but increase in the temperature of an untopped oil is frequently accompanied by the liberation of gasolene and other vapors which introduce fire hazards, for which proper precautions must be taken.

As a rule, heavy oils must be heated to at least 70° F. before they will flow freely, but the temperature should be kept below 100° F. on the suction side of the pumps, because the liberation of vapors at this temperature from an untopped oil will cause the pumps to lose suction. It is also advisable to locate the pumps so that oil flows to them under a gravity head as the liability of losing suction is thereby reduced. While 100° F. is a sufficient temperature to reduce the oil viscosity so pumps can handle it, the viscosity will still be so great that the oil sprays will not properly distribute it over the top of carburetor. It is, therefore, necessary to heat the oil further, usually to temperatures in excess of 212°, the desirable temperature depending upon the particular oil used.

The oil handling system at Fall River includes a main storage tank, two service

tanks, a line to the wharf for receiving oil in barges with a connection for unloading tank cars, two duplex oil pumps, two oil heaters, and the usual lines to the carburetor oil sprays.

The main oil storage is a steel tank 70 feet in diameter and of 840,000 gallons capacity, located so that there is a good gravity head available at all times to deliver oil to the service tanks. The heating provisions include a space heater and a suction heater, both constructed of steam coils. The function of the space heater, which covers the bottom of the tank, is to heat the oil gently so that it will flow into the suction heater. The suction heater consists of a sheet metal box 17 feet long and 18 inches square, extending from the circumference of the tank toward the center. Oil flows into the box through the inner end. The interior is filled with steam heating coils and the oil is caused to flow over them and to become strongly heated before entering the outlet pipe. The intent is to heat the oil as much as necessary before it enters the pipe lines and to rely on the steam lines inside the pipe line only to maintain the temperature or in other words, to offset radiation.

The tank is protected by an earth dike of one and one-half times the capacity of the tank. It is also equipped with a steam smothering line extending around its entire top circumference and controlled by a valve located at a safe distance outside of the dike. Any vapors which are liberated in warm weather or by the heaters are carried off through a 6″ vapor vent to a distance of 50 feet from the tank.

The oil pipes connecting the storage tank, wharf and service tanks are of 6 inch steel pipe with screwed points. A 1-inch welded steam heating line is carried through the entire length of the oil lines, being kept in place in the center of the pipe by wrought iron supports. On account of the difference in expansion of the steam pipe and oil pipe, stuffing boxes are provided so that the steam line may expand freely. At turns in the pipe line and at valves, special construction is necessary in which the steam line is carried outside of the oil line and returned again through a flexible swing connection. It is advisable to keep changes in the direction of oil lines down to a minimum as at such points manholes are necessary to enable the stuffing boxes to be examined and packed. At Fall River all buried oil lines are enclosed in a wooden box filled with sawdust.

The service tanks are the link between the main storage and the oil pumps. At Fall River, two are provided, of concrete construction, and each of 10,000 gallons capacity.

Being underground, they may be located anywhere in the plant without presenting a fire hazard. A considerable saving of heating steam is also possible by the use of service tanks, as no steam need be used in the main storage tank except once a day when filling the service tanks. The tanks are provided with space and suction heaters similar to those of the main storage tank, as well as with steam smothering lines.

One wall of the tanks is also a wall of the pump house basement, so that the oil pump connections are short.

No special oil pump construction is necessary for handling heavy oil. The pump sizes should be more generous than when handling the more fluid high gravity oil, the piston speed being limited to 50 feet per minute. A slow moving pump will draw oil gently from the ser-

vice tank and will reduce the danger of losing suction. Another point to be considered is the fact that heavy oils should be admitted to the carburetor at a faster rate than our present practice calls for, in order to obtain a longer purging time. This also increases the size of the oil pumps.

Heaters are required at the outlet of the pumps to heat the oil to the temperature which is necesary for proper distribution over the carburetor top. Steam is the heating medium. A great many different makes of oil heaters are on the market, and most of them operate satisfactorily. In general, they may be divided into two types, those containing a spiral coil through which the oil circulates, and those containing a series of tubes around which oil circulates. The former type is somewhat similar to an instantaneous gas water heater, the latter embodies some of the features of a storage type heater. At Fall River, two spiral coil type heaters have been installed.

The lines to the water gas sets are insulated with steam pipe covering to keep the oil hot. A return line from the inlet of the meter to the tank has been provided to keep up circulation in the lines when the set is not using oil, the operation being automatically regulated by a pressure relief valve set a few pounds below the pump governor. The quantity of oil flowing into the return line can be regulated by increasing or decreasing the differential between the pump governor and relief valve pressures.

Circulating Water System

The circulating water system should be designed to take care of the considerable quantities of lamp black which have to be handled at times. With high coke content oils, the range in temperature at which fluid tar is made is small. At higher temperatures viscous tar or a considerable amount of lamp black is formed. Accordingly, the wash box overflow lines should be generous in size and arranged so that stoppages can be cleaned out.

The Fall River circulating system consists of a circulating tank, tar separator, coke filter, and tar and circulating water pumps. The pumps are erected in the

Pump House—Oil Service Tanks

pump house which contains the oil pumps and oil heaters, the concrete work of the house being integral with the tar separator, coke filter, collecting well and oil service tanks.

The circulating water tank is 11 feet in diameter and 15 feet high and has a steel baffle extending about half way down from the top. The wash box water circulates through this tank, the tar separates to the bottom and is drawn out at intervals through a slight overflow. By this arrangement, the tar separator is required to handle only the tar drawn from the circulating tank and the drips from the plant. It is expected that this arrangement will result in insuring a good quality of tar.

The tar extractor is 26 feet long, 8 feet wide and 8 feet deep. It has the usual wood baffles, the heights of which are adjustable. A collecting well, 8 feet square and 15 feet deep, receives all of the condensate and drippage from the entire plant. No pumping of drips is necessary.

Relief Holder

The relief holder is a two-lift steel tank holder of 300,000 cu. ft. capacity, the inlet and outlet being 36 inches in diameter. The holder has been provided with a tar draw-off from the bottom and with a skimming device to permit holder oil to be drawn off. A Livesey seal has been provided over the outlet pipe to prevent the crown from being drawn in.

Washer Cooler

The washer cooler, which is 5 feet in diameter and 40 feet high, is designed to cool 3,500,000 cu. ft. of gas per day from 160° to 70° F. It is located between the relief holder and the exhausters, the liquor circulating pumps being erected close to the cooler tower, while the cooling coils are located so that water from the 2,000,000 cu. ft. holder tank flows by gravity over them, being returned to the holder tank by a sump type motor driven centrifugal pump which is controlled by an automatic float switch. Salt water from the bay is also available for cooling the coils and two 300-gallon per minute motor driven centrifugal pumps have been provided in a pump house at the wharf for this purpose.

The function of the washer cooler is to deliver gas of a predetermined uniform temperature to the exhausters. At the present time and for several years to come, the water gas plant will be operated intermittently, being shut down several hours every night. During shutdowns, the relief holder, gas mains and washer cooler all cool. As it is necessary to circulate a constant quantity of water through the cooler tower in order to remove tar, it has, heretofore, taken several hours after starting the eqiupment before the gas reaches the desired temperature. The regulation of temperatures is now accomplished by a duplex temperature control which is actuated by a thermostat inserted in the gas at the outlet of the cooler. This thermostat controls the flow of water in a line which by-passes the cooling coils and also regulates the quantity of cooling water flowing over the coils. When the plant is started cold, the by-pass line is opened wide and the cooling water line shut tight. During this time, water is being circulated over and over again through the cooler without being cooled as the coils are entirely by-passed as the temperature of the gas tends to rise, the valve in the by-pass line is gradually closed, thereby reducing the quantity of water flowing through it and correspondingly increasing the quantity passing through the cooling coils, the water passing through them being subjected at that time to air cooling only. With the increasing tendency of the gas outlet temperature to rise, the by-pass valve is entirely closed and later the cooling water line is gradually opened to the desired point.

Exhausters

Two exhausters, each having a capacity of 4,500,000 cu. ft. of gas per day, have been installed at the outlet of the washer cooler. They are of the horizontal impeller type, gas entering at the bottom and leaving at the top. A revivifying air blower has been mounted on each exhauster bedplate and is driven by an

enclosed silent chain drive from the exhauster shaft. Meters have also been provided to measure the quantity of revivifying air used. The exhausters are located in the condenser house and force the gas through a P. &. A. tar extractor, 5 feet in diameter and 7 feet high, and through an immersion washer 6 feet x 8 feet x 3 feet.

Purifiers

The purifier installation consists of four 30-foot diameter x 14-foot 6-inch purifiers. The pipe connections between the boxes contain 17 gate valves, which permit any box to be used as a catch box, while reversing the flow through the other three. For example, with box 2 as the last of the series, the other three can be used in the order 3-4-1 or 1-4-3. In addition, internal valves have been provided in each box so that the gas may be admitted to the center and withdrawn from the top and bottom, or vice versa. In either case, the gas passes through the two 6-foot layers of oxide in parallel.

The boxes are insulated with 3 inches of asbestos protected by a brick wall. The tops are covered with block asbestos covered with a good tar-paper roofing. The top covers are insulated on the inside with asbestos blocks. Steam coils have been provided as an additional precaution against freezing the oxide.

Each box contains eight large clean-out doors, each door being large enough to permit a portable belt conveyor to enter the box so that the oxide need only be shoveled once when unloading a box.

With three boxes in service, between 6,000,000 and 7,000,000 cu. ft. of water gas of normal H_2S content can be purified daily. The H_2S content of gas made from high sulphur oils, however, frequently exceeds 500 grains per 100 cu. ft. The purifier installation, with one box out for refilling, can purify 4,500,000 cu. ft. of such gas per day.

Meter

After being condensed and purified, the gas is measured in a 14-foot diameter Hinman drum station meter and mixed with coal gas at the storage holder inlet.

Piping

In designing the small piping of the plant, particular attention was paid to accessibilty for repair and to protection from soil corrosion.

In the central part of the plant, concrete pipe trenches have been provided with the pipes suspended on the walls so as to give ample space to repair any pipe without interfering with the others in the trench. All underground piping which is exposed to the soil is cast iron. This includes tar and drip piping and part of the salt water lines. All underground steel pipes have been laid in wooden boxes, the wood being chemically treated to prevent rotting. The underground large gas piping has lead wood joints. The overhead gas piping is of 5-16 inch welded steel.

Conclusion

Engineers who contemplate extensions to their plants in the near future should seriously consider and plan for the use of heavier enriching oils.

Current plant extensions may be expected to have a useful life of not less than 20 years and in that space of time enrichment with what we now know as "gas oil" will certainly be a thing of the past.

To design a plant to use heavy oil adds only a few per cent to the construction cost, while the ability to select the grade of enricher which will give the lowest holder cost will return the increased investment many times during the life of the plant.

Employment Bureau

SERVICES REQUIRED

WANTED—A high grade commercial man to handle commercial work in a Southern Gas Company in a town of 15,000 people. Must be capable of writing advertisements, arrange displays, and be willing to make a house to house canvass. Salary and commission basis of payment. Address A. G. A.
Key No. 07.

WANTED—Distribution Engineer for company in rapidly growing territory. Must be thoroughly experienced on distribution work, both high and low pressure, with welded and cast iron pipes. Must be able to handle men and produce results. Company has 50,000 meters and offers a splendid opportunity for capable man. Address A. G. A.
Key No. 019.

WANTED—FOREMAN for Gas Department. High pressure distribution. Experienced in running extensions, services, regulators, meters, gas appliance installations, appliance maintenance, and complaint work. Permanent position in good locality in East. 3,000 services. State age, experience, salary expected and references. Address A. G. A.
Key No. 020.

WANTED—Superintendent Gas Department in an eastern gas and electric company with a send-out of approximately 25,000,000 cubic feet a year. A young technical graduate with some gas experience is preferred for this position. Address A. G. A.
Key No. 021.

WANTED—Two Industrial Gas Salesmen for middle west city having an attractive gas rate. State experience, salary wanted. Address A. G. A.
Key No. 011.

WANTED—A progressive New England Gas Company selling annually 200 Automatic Water Heaters requires the services of a first class water heater salesman. Must be clean cut with personality and ability to sell consumers and plumbers. A good position for a good man. Give qualifications, age, experience, references and salary desired. Address A. G. A.
Key No. 012.

WANTED—Sales Engineer experienced in designing silica and fire clay Retort Benches and other furnaces. State experience and what acquaintance, if any, with the Gas Trade. Address A. G. A.
Key No. 013.

WANTED—We want a man of long experience on gas main and service work, particularly high pressure, setting and adjusting regulators, etc. State age, experience and salary desired. Address A. G. A.
Key No. 014.

CUSTOMER OWNERSHIP—Wanted, man experienced in customer ownership stock campaigns. Approximately 20,000 gas and electric consumers; about 90,000 population. Advise experience, salary desired, references, etc. Address A. G. A.
Key No. 016.

WANTED—Chief Clerk, 10,000 gas and electric accounts; approximately 14 employees. Property is one of a large group with excellent future prospects. State age, salary desired, references, and submit full and complete details regarding experience. Address A. G. A.
Key No. 017.

SALESMAN WANTED—By a company operating a group of gas and electric companies about to increase their sales force, desire to secure the services of several experienced gas, electric or gas and electric salesmen to sell appliances in their all-year selling organization. Address A. G. A.
Key No. 018.

WANTED—A young technical graduate (about 22 to 27 years of age) for general Physical Testing and Research, by a large eastern gas company. Must have a good knowledge of general physics, particularly electrical measurements, and some gas works' experience. Should be able to plan and execute tests and research work, and prepare comprehensive reports thereon. An exclusively chemically educated man not wanted. Give full particulars in the first letter. Address A. G. A.
Key No. 015.

SERVICES OFFERED

WANTED—Position by a man of large general experience in gas business who has made a special study of sales promotion problems, and who would prove valuable as an assistant to a busy executive in any department. Address A. G. A.
Key No. 134.

WANTED—Position of responsibility as Manager or Industrial Fuel Engineer—18 years varied experience in the gas business. References and service record furnished. Address A. G. A.
Key No. 142.

YOUNG TECHNICAL GRADUATE with slight amount of gas experience and in valuation work wants position with gas company. Address A. G. A.
Key No. 150.

POSITION WANTED—By-Product, Coke-Oven Executive seeks more responsible connection. Fitted for Chief Chemical Engineer, Assistant-Superintendent or Assistant to Manager. University Graduate. Alexander Hamilton Institute Graduate. Nearly seven years with present 3000 ton plant. Thirty-two years old. Married. Address A. G. A.
Key No. 151.

POSITION WANTED as superintendent of small gas company or as general foreman of large plant. Approximately seventeen years' experience in all branches of manufacture and distribution, high and low pressure systems. Address A. G. A.
Key No. 152.

YOUNG MAN 27 years of age, seven years' experience with president of combination gas, electric, and street railway property, town of 40,000 people, desires new connection. Thoroughly experienced in the handling of correspondence and the compilation of financial, statistical and operating reports and statements, as well as the general work in connection with public utility corporations. Address A. G. A.
Key No. 153.

COMMERCIAL MANAGER OR GAS APPLIANCE SALESMAN—Seven years' experience in all commercial departments of Eastern coal gas company. Five years' experience in selling domestic and industrial gas appliances. Willing to work in office or outside selling. Experienced in handling personnel of the departments. Address A. G. A.
Key No. 154.

WANTED—Gas Engineer, experienced in coal and water gas production, with large experience in experimental work, would like a position as supervisory engineer of a large plant or chain of plants or a position as experimental engineer. Capable of carrying on large tests on a practical operating scale and of getting results. Specialist in the use of bituminous coal in water gas production. Has been an active member of several A. G. A. technical committees. Author of several reports and publications on gas technical subjects. Graduate in Chemical Engineering from a large middle western university. Age 38, married. Now employed. Address A. G. A.
Key No. 149.

WANTED—Am open for a position of greater responsibility. At present manager of gas company in city of over 5000 gas consumers. Experience consists of four years as manager and eleven years in operating, construction and distribution. Age 39, married. Address A. G. A.
Key No. 157.

WANTED—Plant or General Superintendent position wanted by married man, who has grown up in the gas business, and worked through the manufacturing and distribution departments to General Superintendent of plant of 1,000,000 cubic feet per day capacity. Thirteen years with last company. Coal and water gas manufacture and high and low pressure distribution. College graduate. Address A. G. A.
Key No. 155.

WANTED—Experienced gas man would connect with a going company in managerial capacity. Can report with reasonable notice. No choice as to location. Address A. G. A.
Key No. 156.

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